

approved Fred Chap
10-7-03

Site Assessment Report

Former Underground Storage Tank 765A and
Oil/Water Separator 765B

Marine Corps Air Station, El Toro

Santa Ana, California

GSA Contract No. GS-10F-0048J

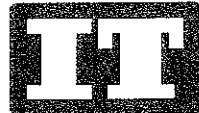
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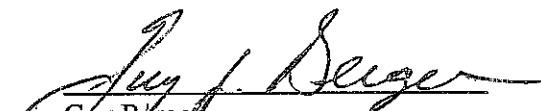
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Date:13 September 2004

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5796 Corporate Avenue
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Subj:Former UST Site 765A (SWMU 217)
& Former OWS Site 765B (SWMU 218)
Former Marine Corps Air Station, El Toro

Provided for your review as the attachment is the Site Assessment Report for Former UST Site 765A and Former OWS Site 765B at the former Marine Corps Air Station, El Toro.

Please do not hesitate to contact me at (619) 532-0783 if you have questions pertaining to this transmittal.

Attachment
Site Assessment Report (IT 2003)

Copy to:
Project File

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Abbreviations and Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
BTEX	benzene, toluene, ethylbenzene and total xylenes
CDM	Camp, Dresser & McKee, Inc.
CERCLA	Comprehensive Environmental Response and Liability Act
DO	Delivery Order
DTSC	Department of Toxic Substance Control
EPA	U.S. Environmental Protection Agency
ft/ft	feet per foot
IRP	Installation Restoration Program
IT	International Technology Corporation
JEG	Jacobs Engineering Group Inc.
LUFT	Leaking Underground Fuel Tank
msl	mean sea level
MTBE	methyl tert-butyl ether
OCHCA	Orange County Health Care Agency
OHM	OHM Remediation Services Corp.
OWS	oil/water separator
PRGs	Preliminary Remediation Goals
RCRA	Resource Conservation and Remedial Act
RFA	RCRA Facility Assessment
RWQCB	Regional Water Quality Control Board
SAR	Site Assessment Report
Station	Marine Corps Air Station El Toro
SWDIV	Southwest Division Naval Facilities Engineering Command
SWMU	solid waste management unit
TAA	temporary accumulation area
TPH	total petroleum hydrocarbons
TRPH	total recoverable petroleum hydrocarbons
UST	underground storage tank
VOC	volatile organic compound

Section 1

Introduction

This Site Assessment Report (SAR) summarizes the findings from the confirmation soil sampling activities conducted at the former underground storage tank (UST) 765A (also known as Solid Waste Management Unit [SWMU] 217) and oil/water separator (OWS) 765B (also known as SWMU 218), at the Marine Corps Air Station El Toro, California (herein after referred to as the Station). The work was performed by IT Corporation (IT) under Southwest Division Naval Facilities Engineering Command (SWDIV) Contract No. N68711-00-F-0115 and GSA No. GS-10F-0048J, as modified in September 2001.

IT conducted confirmation drilling and sampling activities at former UST 765A and OWS 765B site. The sampling was conducted to evaluate the subsurface conditions and to ascertain the vertical extent of petroleum hydrocarbons and volatile organic compounds previously identified during the removal of the UST 765A and OWS 765B.

This report includes summary of UST 765A and OWS 765B removal activities, previous investigations, and recent confirmation boring field activities. Confirmation soil boring results indicate that there are no significant residual petroleum hydrocarbons or volatile organic compounds below the former UST 765A and OWS 765B excavation; consequently a recommendation that the unauthorized release case number 98-491 be "closed" is included.

1.1 Site Location

The Station is located in Orange County, California, approximately 45 miles southeast of the City of Los Angeles, and 1 mile north of the intersection of Interstate 5 (Santa Ana Freeway) and Interstate 405 (San Diego Freeway). The Station covers approximately 4,738 acres, and is shown in Figure 1.

Former UST 765A and OWS 765B were located in the northeast quadrant of the Station, near the intersection of West Marine Way and 7th Street. The site is adjacent to the location of former Tank Farm 2. A Vicinity Map is provided as Figure 2.

Former UST 765A and former OWS 765B site is located within a parcel designated for future use as Open Space: Sports Park according to the Great Park Land Use Plan that was issued by the City of Irvine in June 2002. The Great Park Land Use Plan is provided in Appendix A.

Section 2 Site Background and Previous Investigations

This section summarizes relevant background information and previous investigations conducted at former UST 765A and OWS 765B site. Location of former UST 765A and OWS 765B with surrounding sites and previous investigation soil boring sample locations are shown in Figure 3, Site Plan.

2.1 UST 765A and OWS 765B Removal Activities and Background

Former UST 765A was a 500-gallon steel UST. Former OWS 765B was a 100-gallon capacity steel OWS used to separate waste oil and water from oil-containing wash water from the bermed containment area adjacent to Building 765. Both UST 765A and OWS 765B were installed in 1982 (BRAC 2003).

GEOFON INC., Station's contractor, removed UST 765A and OWS 765B in the presence of Orange County Health Care Agency (OCHCA) field inspector on December 14, 1998. One soil sample was collected from the bottom of the excavation at 9 feet below ground surface (bgs) (sample number 765-A), and one soil sample was collected from the excavated soil stockpile (sample number 765-B). Location of the GEOFON excavation confirmation soil sample 765-A is shown in Figure 3. After collection of soil sample, the excavation was backfilled with excavated stockpile soil.

Both soil samples were analyzed for total recoverable petroleum hydrocarbons (TRPH) using EPA Method 418.1, which identified concentrations of TRPH at 969 and 5,680 mg/kg for sample numbers 765-A and 765-B, respectively. A subsequent analysis for volatile organic compounds (VOCs) using EPA Method 8260 indicated the presence of volatile organic compounds in excavated stockpile soil sample 765-B. No VOCs were detected in excavation confirmation soil sample 765-A. Analytical results from UST 765A and OWS 765B removal activities are provided in Table 1.

In January 1999, GEOFON INC submitted an *Underground Storage Tank and Oil Water Separator Removal Report for UST 765A and OWS 765B* to the OCHCA. A copy of the GEOFON report is included in Appendix B. OCHCA consequently referred the site to the California Regional Water Quality Control Board (RWQCB) for oversight due to presence of the VOCs and TRPH in backfill soil.

In a letter dated October 5, 2000, the RWQCB requested additional soil sampling at former UST 765A and former OWS Site 765B. In October 2002, IT prepared a letter work plan for confirmation soil sampling at former UST 765A and OWS 765B site. Copies of the OCHCA and RWQCB correspondence and the IT work plan are provided in Appendices C and D, respectively.

On March 25, 2003, the representatives from RWQCB, Navy, and IT, visited the former UST 765A and OWS 765B site. During the site visit, RWQCB recommended to drill one confirmation soil boring up to 25 feet bgs located within the former excavation boundary. Soil samples were recommended to be collected every 5 feet.

In July 2003, based on RWQCB comments and a site visit, one confirmation soil boring was advanced to approximately 40 feet bgs with soil samples collected at 5, 10, 15, 20 and 25 feet bgs at the former excavation location of UST 765A and OWS 765B. Results of confirmation soil sampling activities are discussed in Section 4.

2.2 RCRA Facility Assessment (RFA)

Jacobs Engineering Group (JEG) in 1991, as part of the RFA performed a preliminary review and a visual site inspection of the 307 Solid Waste Management Units (SWMUs) within the Station. During field RFA site visit in April 1991, JEG identified UST 765A as SWMU 217 and OWS 765B as SWMU 218. Since, SWMU 217 and 218 were located within the Installation Restoration Program (IRP) Site 13, JEG eliminated UST 765A and OWS 765B from RFA sampling visit (JEG 1993). A copy of the relevant RFA information is included in Appendix E.

Former Temporary Accumulation Area (TAA) 765 is located approximately 30 feet northeast of former UST 765A and OWS 765 site. Confirmation soil sampling was performed by OHM Remediation Services Inc. (OHM) for closure activities (OHM 1998). Locations of TAA 765 and confirmation samples are shown in Figure 3. Former TAA 765 was closed by Department of Toxic Substance Control (DTSC) in November 1998 (BRAC 2003).

2.3 Installation Restoration Program (IRP)

Former UST 765A and OWS 765B were located within the site boundary of IRP Site 13, the former Oil Change Area. IRP Site 13 encompasses about $\frac{3}{4}$ of an acre north by former Tank Farm 2 and by storage yard for Building 242 to the south. Site 13 consists of two units: Unit 1, the area southeast of Tank Farm 2 (approximately 17,300 square feet); and Unit 2, the area southwest of Tank Farm 2 (approximately 16,800 square feet) (JEG 1993b) (BNI, 1997). JEG and BNI, respectively, completed the Phase I and Phase II Remedial Investigations (RI) for IRP Site 13 under Comprehensive Environmental Response and Liability Act (CERCLA) program. Locations of RI soil borings are shown in Figure 3.

Historical aerial photographs were reviewed; and air, soil and soil, soil gas and groundwater samples were collected and analyzed during the RI field activities. Also, a fate and transport conceptual model was developed and human health risk assessment was conducted for Site 13. Based on the review of the Phase I, RI field investigation data, and a thorough assessment of potential human health risk at Site 13, a "No Action" Record of Decision (ROD) was issued for Site 13 with other Operable Unit (OU) 3A sites. The Site 13 ROD was signed on September 30, 1997 by the Base Realignment and Closure (BRAC) Environmental Coordinator, DTSC, RWQCB Santa Ana Region, and the EPA, Region IX (BRAC 2003).

2.4 Former Tank Farm 2

Former Tank Farm 2 (TF-2) is located approximately 30 feet northeast of the USI 765A and OWS 765B site. Toxguard Systems Inc removed eight underground storage tanks (USTs) and associated piping in 1995. OHM performed limited subsurface site assessment activities at TF-2 in April 1996. OHM operated a soil vapor extraction system to remove petroleum hydrocarbon contaminants from the vadose zone soil at TF-2 for a period of 1 year from October 1996 to November 1997. OHM submitted a Draft Site Assessment and Remedial Action report for closure of vadose zone soil at TF-2 in April 1998 (OHM, 1998) RWQCB approved closure of TF-2 vadose zone in March 2000 (BRAC 2003).

Section 3

Environmental Setting

This section summarizes the general area surrounding the Station and the environmental setting in the vicinity of former UST 765A and OWS 765B site.

The Station is located on the southeastern edge of the Tustin Plain and extends into the Santa Ana Mountains. The Tustin Plain slopes gently toward the west-southwest with land surface elevations ranging from approximately 215 feet above mean sea level (msl) at the western corner to approximately 410 feet msl at the eastern edge of the Station. Elevations within the portion of the Station in the Santa Ana Mountains extend upward to 800 feet msl near the northeast corner of the Station. The topography in the area of former UST 765A and OWS 765B site is relatively flat, with an approximate elevation of approximately 280 feet above msl datum.

3.1 Regional Geology

The Station is situated on alluvial materials derived mainly from the Santa Ana Mountains. These Holocene materials consist of coarse-grained stream channel deposits and fine-grained overbank deposits that are up to 300 feet thick (Herndon and Reilly, 1989).

The Holocene alluvial materials conformably overlie Pleistocene sediments predominantly composed of interlayered fine-grained lagoonal and near-shore marine deposits. These materials become increasingly mixed with beach sands, terrace deposits, and stream channel deposits in the eastern portion of the Tustin Plain and along the eastern plain edges. The Quaternary deposits form a heterogeneous mixture of silts and clays, with interbedded sands and fine gravels up to 500 feet thick in the western portion of the Tustin Plain (Singer, 1973).

3.2 Regional Hydrogeology

The Station is situated within the Irvine Groundwater Subbasin, which comprises the southeast segment of the Main Orange County Groundwater Basin. Regional groundwater flow in the Subbasin has been to the west and northwest since the 1940s and is controlled locally by large groundwater withdrawal depressions. From 1969 to 1982, an average gradient of 0.0046 feet per foot (ft/ft) to the northwest was reported in the principal aquifer zone of the Irvine area (Banks, 1984). Phase I remedial investigation data indicated a similar groundwater flow direction in the shallower groundwater zone, with a slightly higher gradient of 0.008 ft/ft (JEG, 1993).

The depth to groundwater beneath the Station ranges from approximately 45 feet below ground surface in the foothills to 240 feet below ground surface in the deepest portion of the Irvine Subbasin. Groundwater depth in the vicinity of former UST 765A and OWS 765B site is estimated to be 115 feet bgs, based on available water-level data from groundwater monitoring.

well 13_DBMW49 (CDM Federal Programs, 1997) and nearby groundwater monitoring well 18_BGMW03 (CDM Federal Programs, 2003).

Section 4

Field Activities

IT performed field activities at former UST 765A and OWS 765B site to delineate the vertical extent of petroleum hydrocarbons and VOCs that may have been released from former UST 765A and OWS 765B site. Field activities included a site inspection, drilling, sampling, collection and analyses of soil samples from one confirmation soil boring.

Fieldwork was performed in accordance with the *Letter Work Plan for Site Assessment at UST 765A and OWS 765B Site* (IT, 2002).

4.1 Confirmation Boring Activities

4.1.1 Drilling Activities

On August 1, 2003, one confirmation soil boring (OWS-765-CB-01) was advanced to a depth of approximately 40 feet bgs at former UST 765A and OWS 765B excavation boundary as shown in Figure 3. The soil boring was advanced using a CME 85, drill rig and hollow stem auger techniques. In order to prevent cross contamination from potentially contaminated backfilled soil (up to 9 feet depth) to deeper soil, a 12-inch diameter auger was used to drill down to approximately 10 feet bgs. With the 12-inch auger in place, a 6-inch auger was used to drill through the 12-inch auger, acting as protective casing, to a total depth of 40 feet bgs. Following completion of the sampling, the boring CB-01 was backfilled to the surface with a bentonite grout.

4.1.2 Sampling and Analysis

Soil samples were collected from confirmation boring 765-CB-01 at depths of 5, 10, 15, 20, 25, 30 and 40 feet bgs using a California-modified split-spoon sampler containing three, 6-inch long stainless steel sleeves. The sampling equipment was decontaminated between each sample interval. Soil samples collected at 30 and 40 feet bgs were placed on hold with instructions to laboratory that if 25 foot soil sample detected TPH and VOCs than only to analyze 30 and 40 foot samples.

A total of six; 5-gram EnCore® tubes per sample were collected from the ends of each sleeve for VOC (including MTBE and other oxygenates) and TPH as gasoline analyses. The middle sleeve from each sample was retained for TPH as diesel (TPHd) analysis. Each soil sample collected (including both EnCore tubes and sleeves) were sealed with Teflon® and/or capped, labeled, bagged separately, placed in an ice chest and submitted to EMAX Laboratories of Torrance, California (an NFESC approved analytical laboratory). The soil remaining in the upper and lower sleeves of each sample was bagged and screened for the presence of VOCs using a calibrated Mini-Rae 2000® photo-ionization detector (PID). The PID detected no VOCs to the total boring depth of 31.5 feet bgs. Following collection of the soil samples, boring 765-CB-01 was completed to the surface by backfilling with a 95 percent cement to 5 percent bentonite mixture of cement bentonite grout.

4.1.3 Analytical Results

Volatile organic compounds (including benzene and MTBE), except acetone a common laboratory contaminant (detected in all five samples with highest hit of 18 "J" ug/kg), TPH as diesel, and TPH as gasoline were not detected above laboratory reporting limits from all five samples collected at former UST 765A and OWS 765B site. The analytical results and quality control results of the soil samples collected from the confirmation boring are presented in Tables 1 and 2, respectively. Laboratory analytical reports and Level III data validation report are provided in Appendix F.

4.1.4 Soil Lithology

An IT field geologist logged the soil cuttings and the recovered soil samples according to the Unified Soil Classification System (USCS) as the boring was advanced. In addition, hammer blow counts, PID readings and any detectable odors were recorded at the sample depths of 5, 10, 15, 20, 25, 30 and 40 feet bgs. Soil materials encountered in boring 765-CB-01 are briefly described below and the 765-CB-01 boring log presented in Appendix G.

The former UST 765A and OWS 765B site is capped with a 9-inch thick paving section composed of 4-inches of asphalt over 6-inches of aggregate base. The paving section is covered with a 3 to 4 inch layer of silty sand. Beneath the paving section from 1 to approximately 15 feet bgs is artificial fill. The artificial fill consists of 2 feet thick alternating layers of clayey sand (SC), silty clay (CL) silt (ML) and silty sand (SM). These fill materials are dark brown to dark yellowish brown, dry to damp and medium dense or stiff. Faintly discolored areas were noted in the fill material from 5 to 10 feet bgs and a slight TPH odor was detected. PID readings range from 5 to 15.2 parts per million over the same interval (namely 5 to 10 feet bgs).

An alternating fining upward sequence of native alluvial over bank and channel deposits were found below the fill material from 15 to 41.5 feet bgs. The over bank deposits consist mainly of silt (ML) and clay (CL) in lesser amounts. These materials are brown to dark yellowish brown, damp to moist and soft to very stiff with increasing depth. The channel deposits consist mainly of poorly graded sand (SP) and lesser amounts of silty sand (SM). These materials are brown to dark yellowish brown, damp to moist and medium dense to dense or stiff to very stiff with increasing depth. No evidence of staining due to the presence of soil contaminants was noted in the native materials from 15 to 41.5 feet bgs and the PID readings were non detect over the same interval.

4.2 Waste Management

Soil cuttings generated during the drilling and sampling operations were placed in a roll-off bin and decontamination water generated during the drilling and sampling operations was containerized in a single 55-gallon Department of Transportation steel drum. On September 9, 2003, the soil cuttings and decon water were transported for disposal as non-hazardous waste to US Filter of Los Angeles, California, a RCRA approved facility. A copy of the non-hazardous waste manifest is included as Appendix H.

4.3 Land Survey

After completing the confirmation soil sampling at former UST 765A and OWS 765B, the confirmation soil boring location was surveyed by a California-licensed land surveyor. The surveyed location was measured to ± 0.01 foot horizontally and tied to the California State Plane Coordinate Systems, North American Datum 1983. The surveyed elevations were measured to ± 0.01 foot vertically and tied to mean sea level datum. The land surveying data for former UST 765A and OWS 765B are presented as Appendix I.

Section 5

Conclusions and Recommendations

The following observations are based upon information from UST 765A and OWS 765B removal report, historical reports, surveys, existing records, and IT soil sampling data from confirmation soil boring:

- Former UST 765A was a 500-gallon steel UST and OWS 765B was a 100-gallon capacity, steel OWS installed in 1982, used to separate waste oil and water. OWS 765A collected and separated oil-containing wash water from the bermed containment area adjacent to Building 765.
- Former UST 765A and OWS 765B were designated as SWMU 217 and 218 respectively by JEG under RFA. Since both UST 765A and OWS 765B were located within IRP Site 13, no further sampling was performed as part of RFA.
- A “No Further Action” ROD was signed for IRP Site 13 in September 1997 after completion of Phase I and Phase II Remedial Investigations under CERCLA program.
- Groundwater depth in the vicinity of former UST 765A and OWS 765B site is estimated to be 115 feet bgs.
- Former UST 765A and OWS 765B were removed by GEOFON in the presence of OCHCA field inspector on December 14, 1998. One soil sample was collected from the bottom of the excavation at 9 feet bgs (sample number 765-A), and one soil sample was collected from the excavated stockpile soil (sample number 765-B).
- Confirmation soil sample (765-A) collected from the bottom of the excavation detected TRPH at 969 mg/kg but VOCs were not detected above laboratory detection limit. Excavated stockpile soil sample (765-B) detected TRPH at 5,680 mg/kg and various VOCs. Benzene or MTBE were not detected in both confirmation and stockpile soil sample.
- A UST 765A and OWS 765B removal report was submitted to the OCHCA, who referred the site to the RWQCB, Santa Ana region. After review of the report, in a letter dated October 5, 2000, the RWQCB requested additional soil sampling at former UST 765A and OWS 765B site.
- On March 25, 2003, the representatives from the RWQCB, Navy and IT visited the former UST 765A and OWS 765B site. During the site visit RWQCB recommended drilling of one confirmation soil boring within the former excavation boundary.
- In July 2003, based on RWQCB March 2003 site visit, one confirmation soil boring (CB-01) was advanced by IT to 40 feet bgs at the former excavation location and soil samples were collected at five foot intervals to 25 feet bgs. VOCs including benzene or MTBE and TPH as diesel and gasoline were not detected above laboratory reporting limits for all five samples collected at former UST 765A and OWS 765B site.

In summary, UST 765A and OWS 765B were removed and disposed off-site. Confirmation soil sample data from tank removal and confirmation soil boring analytical data indicate that the extent of residual petroleum hydrocarbons and VOCs release is limited and do not pose threat to groundwater quality.

Based on the information provided in this report, it is recommended that "No Further Action" status be requested for former UST 765A (also known as SWMU 217), former OWS 765B (also known as SWMU 218) and OCHCA unauthorized release case number 98-491 be "closed".

Section 6

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Figures

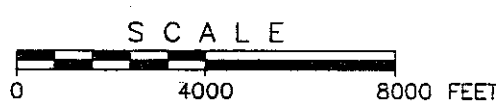
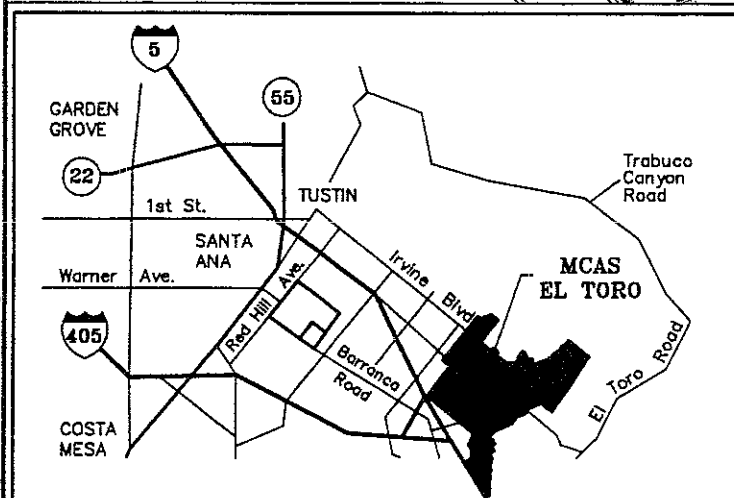
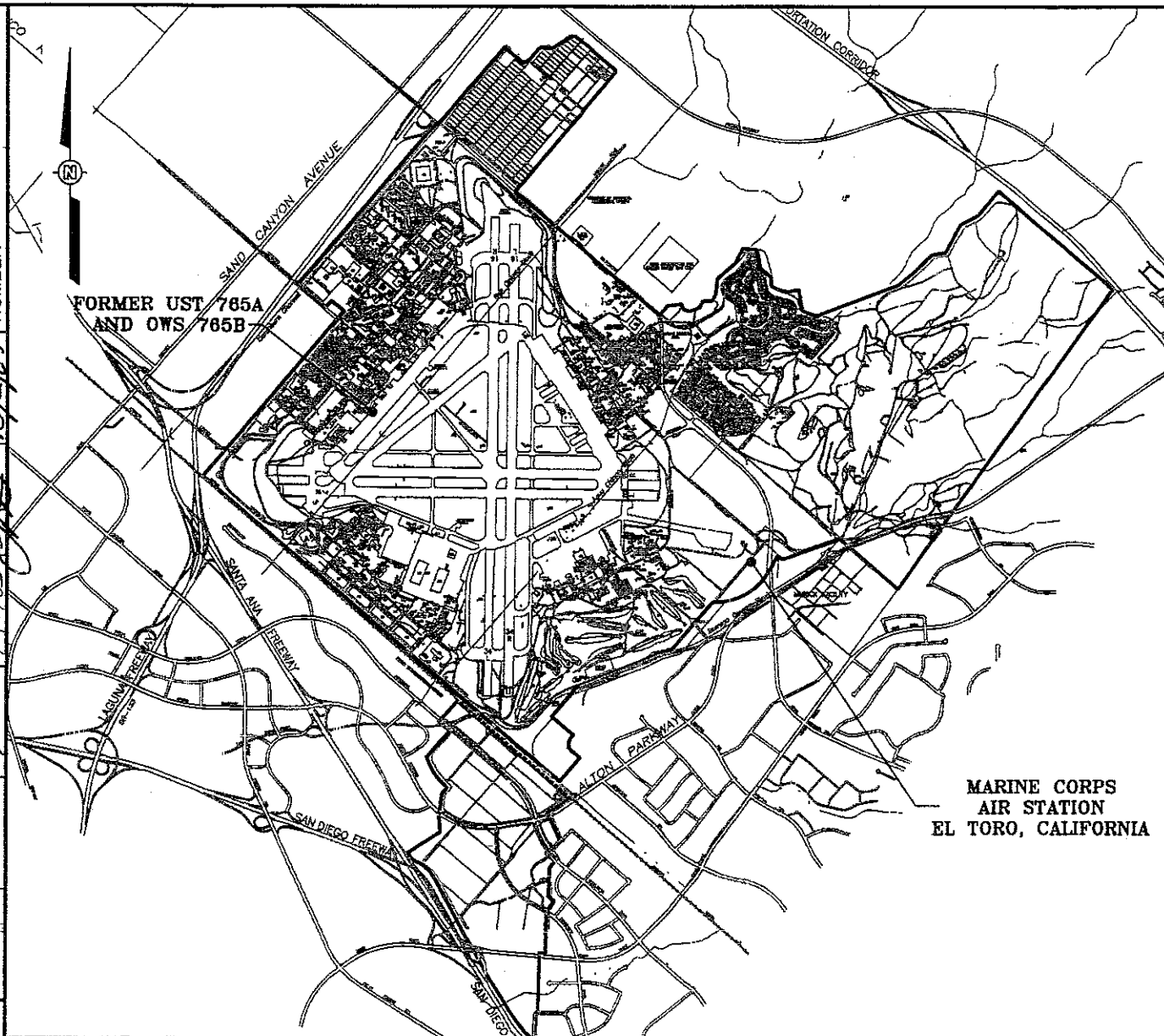
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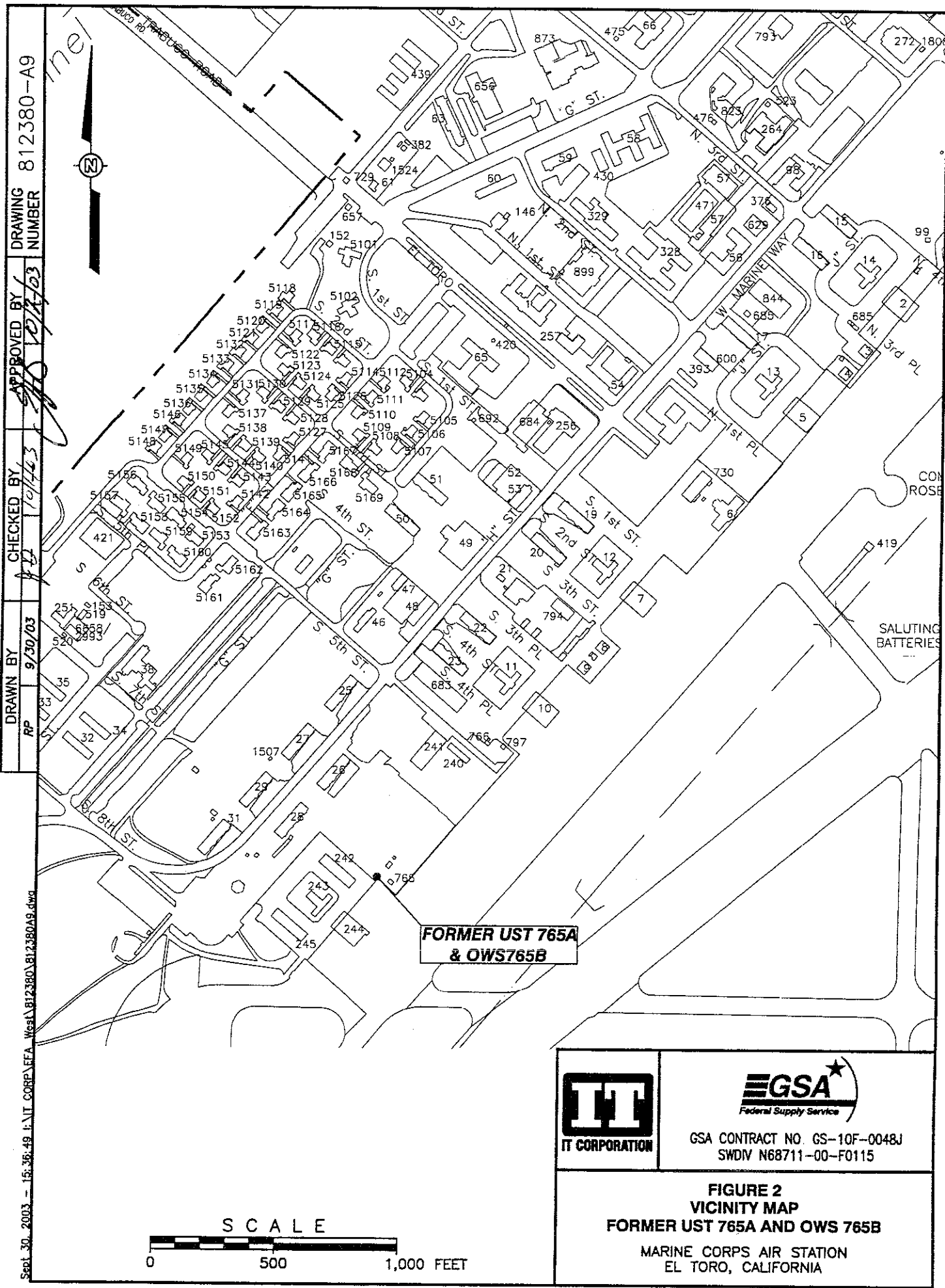
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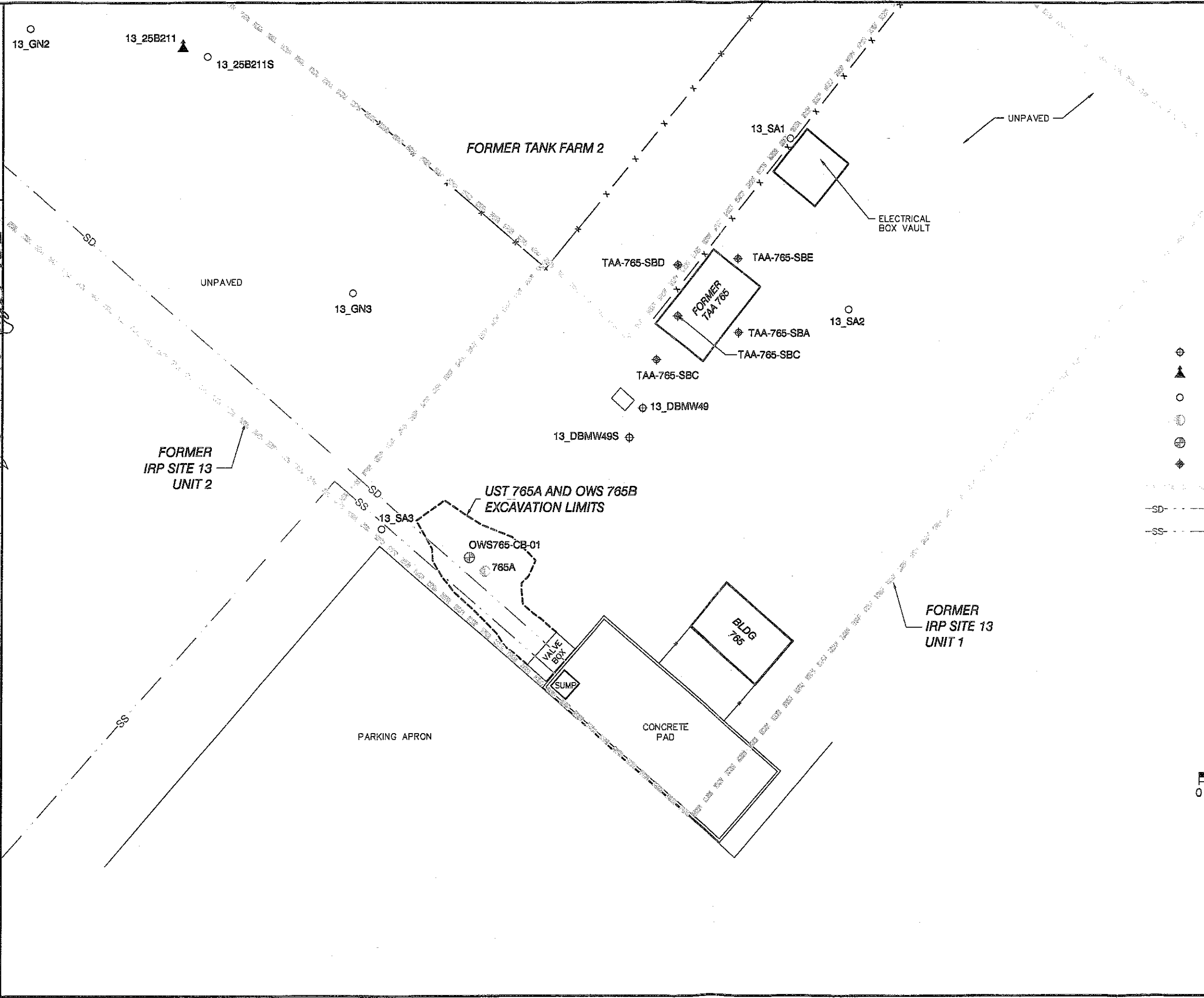


 ITT CORPORATION	 GSA CONTRACT NO GS-10F-0048J SWDIV N68711-00-F0115
<p>FIGURE 1 FACILITY LOCATION MAP FORMER UST 765A AND OWS 765B MARINE CORPS AIR STATION EL TORO, CALIFORNIA</p>	



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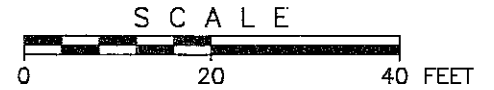


LEGEND:

- ⊕ PHASE I MONITORING WELL
- ▲ PHASE I DEEP OR ANGLE BORING
- PHASE I SURFACE AND NEAR SURFACE SOIL SAMPLE
- ⊙ GEOFON SAMPLE (ESTIMATED FROM FIELD NOTES)
- ⊕ 2003 CONFIRMATION BORING
- ◆ TAA CONFIRMATION SOIL SAMPLES
- IRP SITE 13 BOUNDARY
- SD- STORM DRAIN LINE
- SS- SEWER LINE

NOTE:

-JOB NO. 97102-51.DWG BY CALVADA SURVEYING, INC.
 -PLAN AND DETAIL, SITE NO 17 BY POUNTNEY & YOUNG, INC FEBRUARY 1985



GSA
 Federal Supply Service
 GSA CONTRACT NO. GS-10F-0048J
 SWDIV N68711-00-F0115

FIGURE 3
SITE PLAN
FORMER UST 765A AND OWS 765B
 MARINE CORPS AIR STATION
 EL TORO, CALIFORNIA

Tables

Table 1

Analytical Results for Soil Samples — Former UST 765A and OWS 765B, MCAS El Toro, California

Sample Identification		Unit	Residential PRGs ³	AE55128 ¹		AE55131 ¹		812380-0089		812380-0090		812380-0091		812380-0092		812380-0093		
Location Code	Date Sampled			765-A ²	765-B ²	OWS765-CB-01	OWS765-CB-01	OWS765-CB-01	OWS765-CB-01	OWS765-CB-01	OWS765-CB-01	OWS765-CB-01	OWS765-CB-01	OWS765-CB-01	OWS765-CB-01	OWS765-CB-01	OWS765-CB-01	
Depth (feet below ground surface)				12/14/98	12/14/98	08/01/03	08/01/03	08/01/03	08/01/03	08/01/03	08/01/03	08/01/03	08/01/03	08/01/03	08/01/03	08/01/03		
				9	Stockpile	5	10	15	20	25								
TPH (EPA 8015M)																		
Diesel		mg/kg	NE	NA	NA	11 U	12 U	11 U	12 U					12 U		11 U		
Gasoline		mg/kg	NE	NA	NA	1 U	1.4 U	1.2 U	.99 U						.99 U	.96 U		
VOLATILES (EPA 8260B)																		
1,1,1-Trichloroethane		µg/kg	1200000	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
1,1,2,2-Tetrachloroethane		µg/kg	410	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
1,1,2-Trichloroethane		µg/kg	730	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
1,1-Dichloroethane		µg/kg	510000 <2800>	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
1,1-Dichloroethene		µg/kg	120000	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
1,2,3-Trichlorobenzene		µg/kg	NE	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
1,2,3-Trichloropropane		µg/kg	5	10 U	10 U	5.4 U {2.2}	5.8 U {2.3}	5.3 U {2.1}	5.2 U {2.1}					5.2 U {2.1}		4.7 U		
1,2,4-Trichlorobenzene		µg/kg	650000	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
1,2,4-Trimethylbenzene		µg/kg	52000	10 U	1580	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
1,2-Dichlorobenzene		µg/kg	370000	10 U	119	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
1,2-Dichloroethane		µg/kg	280	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
1,2-Dichloropropane		µg/kg	340	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
1,3,5-Trimethylbenzene		µg/kg	21000	10 U	4060	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
1,3-Dichlorobenzene		µg/kg	16000	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
1,4-Dichlorobenzene		µg/kg	3400	10 U	28.7	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
2-Butanone		µg/kg	7300000	50 U	50 U	54 U	58 U	53 U	52 U					52 U		47 U		
2-Chlorotoluene		µg/kg	160000	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
2-Hexanone		µg/kg	NE	50 U	50 U	54 U	58 U	53 U	52 U					52 U		47 U		
4-Chlorotoluene		µg/kg	NE	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
4-Methyl-2-Pentanone		µg/kg	790000	50 U	50 U	54 U	58 U	53 U	52 U					52 U		47 U		
Acetone		µg/kg	1600000	50 U	50 U	18 J	15 J	14 J	15 J					15 J		17 J		
Benzene		µg/kg	600	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
Bromobenzene		µg/kg	28000	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
Bromodichloromethane		µg/kg	820	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
Bromotorm		µg/kg	62000	50 U	50 U	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		
Bromomethane		µg/kg	3900	30 U	30 U	5.4 UJ	5.8 UJ	5.3 UJ	5.2 UJ					5.2 UJ		4.7 UJ		
Carbon Disulfide		µg/kg	360000	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U					5.2 U		4.7 U		

Table 1
Analytical Results for Soil Samples — Former UST 765A and OWS 765B, MCAS El Toro, California

Sample Identification			Residential PRGs ³	AE55128 ¹ 765-A ² 12/14/98 9								AE55131 ¹ 765-B ² 12/14/98 Stockpile				812380-0089 OWS765-CB-01 08/01/03 5		812380-0090 OWS765-CB-01 08/01/03 10		812380-0091 OWS765-CB-01 08/01/03 15		812380-0092 OWS765-CB-01 08/01/03 20		812380-0093 OWS765-CB-01 08/01/03 25		
Location Code	Date Sampled	Depth (feet below ground surface)																								
				Unit																						
				µg/kg																						
Carbon Tetrachloride			µg/kg	250	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Chlorobenzene			µg/kg	150000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Chloroethane			µg/kg	3000	30 U	30 U	30 U	30 U	30 U	30 U	30 U	30 U	30 U	30 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Chloroform			µg/kg	3600 <940>	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Chloromethane			µg/kg	1200	30 U	30 U	30 U	30 U	30 U	30 U	30 U	30 U	30 U	30 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Cis-1,2-Dichloroethene			µg/kg	43000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Cis-1,3-Dichloropropene			µg/kg	780	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Dibromochloromethane			µg/kg	1100	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Ethyl Tertiary Butyl Ether			µg/kg	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Ethylbenzene			µg/kg	8900	10 U	24.8	30 U	30 U	30 U	30 U	30 U	30 U	30 U	30 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Hexachlorobutadiene			µg/kg	6200	30 U	30 U	30 U	30 U	30 U	30 U	30 U	30 U	30 U	30 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Isopropyl Ether			µg/kg	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Isopropylbenzene			µg/kg	160,000	10 U	12.5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Methyl Tert-Butyl Ether			µg/kg	62000 <17000>	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	12 U	11 U	10 U	10 U	9.4 U	9.4 U					
Methylene Chloride			µg/kg	9100	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
N-Butylbenzene			µg/kg	240000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
N-Propylbenzene			µg/kg	240000	10 U	36.2	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Naphthalene			µg/kg	56000	10 U	171	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
P-Isopropyltoluene			µg/kg	NE	10 U	34.6	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Sec-Butylbenzene			µg/kg	220000	10 U	22.8	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Tert-Butyl Alcohol			µg/kg	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Tert-Butylbenzene			µg/kg	390000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Tertiary Amyl Methyl Ether			µg/kg	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Tetrachloroethene			µg/kg	1500	10 U	96.2	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Toluene			µg/kg	520000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Trans-1,2-Dichloroethene			µg/kg	69000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Trans-1,3-Dichloropropene			µg/kg	780	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Trichloroethene			µg/kg	53	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Vinyl Acetate			µg/kg	430000	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
Vinyl Chloride			µg/kg	79	30 U	30 U	30 U	30 U	30 U	30 U	30 U	30 U	30 U	30 U	5.4 U	5.8 U	5.3 U	5.2 U	5.2 U	4.7 U	4.7 U					
O-Xylenes			µg/kg	270000	10 U	132	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA	NA	NA	NA	NA	NA					

Table 1

Analytical Results for Soil Samples — Former UST 765A and OWS 765B, MCAS El Toro, California

Sample Identification			AE55128 ¹	AE55131 ¹	812380-0089	812380-0090	812380-0091	812380-0092	812380-0093
Location Code			765-A ²	765-B ²	OWS765-CB-01	OWS765-CB-01	OWS765-CB-01	OWS765-CB-01	OWS765-CB-01
Date Sampled			12/14/98	12/14/98	08/01/03	08/01/03	08/01/03	08/01/03	08/01/03
Depth (feet below ground surface)			9	Stockpile	5	10	15	20	25
	Unit	Residential PRGs ³							
m&p-Xylenes	µg/kg	270000	20 U	217	NA	NA	NA	NA	NA
Xylene, (Total)	µg/kg	270000	20 U	20 U	5.4 U	5.8 U	5.3 U	5.2 U	4.7 U
TRPH (EPA 418.1)									
Total Recoverable Petroleum Hydrocarbons	mg/kg	NE	969	5680	NA	NA	NA	NA	NA

¹ American Environmental Testing Laboratory, Inc.

² Geolon Tank Removal Soil Data

³ EPA Region IX, 2002, Preliminary Remedial Goals (PRG), October.

EPA - U.S. Environmental Protection Agency

J - estimated value

M - modified

MCAS - Marine Corps Air Station

mg/kg - milligrams per kilogram

NA - not analyzed

NE - not established

OWS - oil-water separator

PRG - preliminary remedial goals

TPH - total petroleum hydrocarbons

U - not detected at or above the stated reporting limit

UJ - estimated reporting limit

UST - underground storage tank

µg/kg - micrograms per kilogram

< > - California Modified preliminary remediation goal

{ } - laboratory method detection limit

Table 2
Analytical Results for Field QC Sample — Former UST 765A and OWS 765B, MCAS El Toro

Sample Identification		812380-0096	
Location Code		Equipment Rinsate	
Date Sampled		08/01/03	
		Unit	
TPH (EPA 8015M)			
Diesel		mg/L	.095 U
Gasoline		mg/L	.1 U
VOLATILES (EPA 8260B)			
1,1,1-Trichloroethane		µg/L	1 U
1,1,2,2-Tetrachloroethane		µg/L	1 U
1,1,2-Trichloroethane		µg/L	1 U
1,1-Dichloroethane		µg/L	1 U
1,1-Dichloroethene		µg/L	1 U
1,2,3-Trichlorobenzene		µg/L	1 U
1,2,3-Trichloropropane		µg/L	.5 U
1,2,4-Trichlorobenzene		µg/L	1 U
1,2,4-Trimethylbenzene		µg/L	1 U
1,2-Dichlorobenzene		µg/L	1 U
1,2-Dichloroethane		µg/L	.5 U
1,2-Dichloropropane		µg/L	1 U
1,3,5-Trimethylbenzene		µg/L	1 U
1,3-Dichlorobenzene		µg/L	1 U
1,4-Dichlorobenzene		µg/L	1 U
2-Butanone		µg/L	10 U
2-Chlorotoluene		µg/L	1 U
2-Hexanone		µg/L	10 U
4-Chlorotoluene		µg/L	1 U
4-Methyl-2-pentanone		µg/L	10 U
Acetone		µg/L	10 U
Benzene		µg/L	.5 U
Bromobenzene		µg/L	1 U
Bromodichloromethane		µg/L	1 U
Bromotorm		µg/L	1 U
Bromomethane		µg/L	2 U
Carbon disulfide		µg/L	1 U
Carbon tetrachloride		µg/L	.5 U
Chlorobenzene		µg/L	1 U
Chloroethane		µg/L	2 U

Table 2
Analytical Results for Field QC Sample — Former UST 765A and OWS 765B, MCAS El Toro

Sample Identification		812380-0096 Equipment Rinsate	
Location Code			
Date Sampled	Unit		08/01/03
Chloroform	µg/L		1 U
Chloromethane	µg/L		2 U
Cis-1,2-Dichloroethene	µg/L		1 U
Cis-1,3-Dichloropropene	µg/L		.5 U
Dibromochloromethane	µg/L		1 U
Diisopropyl Ether (DIPE)	µg/L		2 U
Ethyl Tert Butyl Ether (ETBE)	µg/L		2 U
Ethylbenzene	µg/L		1 U
Hexachlorobutadiene	µg/L		1 U
Isopropylbenzene	µg/L		1 U
Methyl tert-butyl ether	µg/L		1 U
Methylene chloride	µg/L		2 U
n-Butylbenzene	µg/L		1 U
N-Propylbenzene	µg/L		1 U
Naphthalene	µg/L		2 U
p-Isopropyltoluene	µg/L		1 U
sec-Butylbenzene	µg/L		1 U
Tert Amyl Methyl Ether (TAME)	µg/L		1 U
tert-Butyl alcohol	µg/L		1 U
tert-Butylbenzene	µg/L		20 U
Tetrachloroethene	µg/L		1 U
Toluene	µg/L		1 U
Trans-1,2-Dichloroethene	µg/L		1 U
Trans-1,3-Dichloropropene	µg/L		.5 U
Trichloroethene	µg/L		1 U
Vinyl acetate	µg/L		2 U
Vinyl chloride	µg/L		.5 U
Xylene, (total)	µg/L		3 U

MCAS - Marine Corps Air Station

mg/L - milligrams per liter

QC - quality control

U - not detected at or above the stated reporting limit

µg/L - micrograms per liter

Appendix A

Great Park Land Use Plan

[illegible]

A scale bar showing distances of 0, 1000', and 2000'. To the right of the scale bar is a north arrow pointing towards the top right of the page.

Prepared for the City of Irvine by ROMA Design Group and Associated Consultants

JUNE 12 2001

Appendix B

GEOFON Removal Report

**UNDERGROUND STORAGE TANK
AND OIL/WATER SEPARATOR
REMOVAL REPORT**

**UST 765A and OWS 765B
Marine Corps Air Station (MCAS)
El Toro, California**

**Contract No. N68711-97-D-8702
Delivery Order No. 0019**

**Prepared for:
Department of the Navy,
Southwest Division
Naval Facilities Engineering Command
BRAC Operations Office
1420 Kettner Boulevard, Suite 507
San Diego, California 92101-2404**

**Prepared by:

GEOFON, INC.
1081 Camino Del Rio South, Suite 204
San Diego, California 92108**

CERTIFICATION

To the best of our knowledge, all statements and information provided in this report are true and correct.


Asrar Faheem

Registered Environmental Assessor





Charles K. Duckworth, P.E.

Registered Civil Engineer

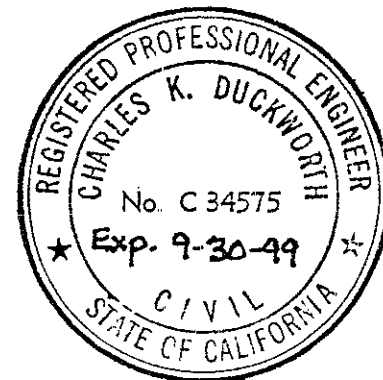


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1.0 INTRODUCTION

GEOFON, Inc. has been retained by the Department of the Navy, Southwest Division (SWDIV), under Contract No. N68711-97-D-8702, Delivery Order No. 0019 to remove and dispose of inactive underground storage tanks (USTs) and oil-water separators (OWS) and conduct washrack repairs at the Marine Corps Air Station (MCAS), El Toro, California (Figure 1). The work involved the removal and disposal of four (4) USTs and two (2) OWS and closure in-place of one (1) OWS at Buildings 797, 765, 766, 655 and 673 and washrack repairs at Building 386 and 761.

This report documents and summarizes work performed at the site of UST 765A and OWS 765B, observations during the UST and OWS removals, investigative findings, waste management, site restoration, conclusions and recommendations. Analytical results for soil samples are presented in Table 1. The UST Removal Summary is presented in Appendix A. The removal permit and tank destruction certificate is included in Appendix B. Laboratory reports and chain-of-custody forms are included in Appendix C. Miscellaneous information including field density tests and modified proctor test data are presented in Appendix D.

2.0 SUMMARY OF WORK AT UST 765A AND OWS 765B

One (1) 500-gallon steel UST and one (1) 100-gallon steel OWS, identified as UST 765A and OWS 765B, historically containing waste oil, with approximately 40 feet of associated piping were removed on December 14, 1998. The operation of removal and disposal of the UST and OWS including the soil sampling of the excavations was performed under the supervision of the Orange County Health Care Agency (OCHCA) and the Assistant Resident Officer in Charge of Construction (AROICC).

2.1 Observations during UST and OWS Removals

The excavation for UST 765A and OWS 765B was located to the northwest of Building 765 and was approximately 14 feet in length, 14 feet in width, and 8 feet in depth. It was observed that the UST was constructed of steel and measured approximately 4 feet in diameter and 4 feet in length. Approximately 53 cu. yd of soil was excavated around the tank and placed near the excavation on 30-mil polyethylene sheeting/visqueen. Groundwater was not encountered during excavation.

2.2 Investigative Findings

Following the UST and OWS removals, GEOFON collected a total of 2 soil samples: one (1) from the bottom of the excavation at 9 feet bgs (765A) and one (1) from the soil stockpile (765B). Soil sample locations were determined by the OCHCA representative and are shown on the UST Removal Summaries included in Appendix A.

The sampling was conducted in accordance with the sampling protocol outlined in the approved Work Plan dated November 6, 1998 and in coordination with the OCHCA and the AROICC. The soil samples were collected following an environmental protocol and transported following standard chain-of-custody procedures to a California-certified laboratory.

The sampling procedures were as follows:

1. All sampling equipment was thoroughly cleaned prior to use.
2. The soil samples were collected from the backhoe bucket. Approximately three inches of soil was removed from the exposed surface prior to collecting the soil sample in a steel sleeve.
3. The sleeve was covered on both ends with three-inch square teflon sheets, sealed with plastic caps, and care was taken to assure that no head-space was present in the sampling tube.
4. The sleeves were labeled; an evidence tape was placed around them and placed immediately into a refrigerated ice chest.
5. The samples were sent to a California-certified laboratory under the proper chain of custody.

Soil samples collected were analyzed by American Environmental Testing Laboratories (AETL), Inc., a California-certified analytical laboratory, for Total Recoverable Petroleum Hydrocarbons (TRPH) using the Environmental Protection Agency (EPA) Method 418.1.

Samples 765A and 765B detected concentrations of TRPH at 969 mg/kg and 5,680 mg/kg, respectively. The samples detected TRPH concentrations in excess of 100 mg/kg, therefore, as required by the OCHCA, the samples were further analyzed for Volatile Organic Compounds (VOCs) by EPA Method 8260. Sample 765A did not detect any VOC constituents above the Practical Quantitation Limits (PQLs) of the laboratory. However, sample 765B detected the following VOC constituents: sec-Butylbenzene at 22.8 µg/kg, 1,2-Dichlorobenzene at 119 µg/kg,

1,4-Dichlorobenzene at 28.7 µg/kg, Ethylbenzene at 24.8 µg/kg, Isopropylbenzene at 12.5 µg/kg, p-Isopropyltoluene at 34.6 µg/kg, Naphthalene at 171 µg/kg, n-Propylbenzene at 36.2 µg/kg, Tetrachloroethene at 96.2 µg/kg, 1,2,4-Trimethylbenzene at 1,580 µg/kg, 1,3,5-Trimethylbenzene at 4,060 µg/kg, o-Xylene at 132 µg/kg and m- & p-Xylenes at 217 µg/kg. Analytical results for soil samples are presented in Table 1. Laboratory reports and chain-of-custody forms are included in Appendix C.

2.3 Waste Management of Rinsate, UST and OWS

Approximately 200 gallons of rinsate from UST 765A and OWS 765B was transported on December 14, 1998 by EFR Environmental Services (EFR), a state-certified waste hauler, to Demenno/Kerdoon, a recycling facility.

The UST and OWS were removed on December 14, 1998 and transported by EFR to Pacific Coast Recycling located in San Diego, California. The tank destruction certificate is included in Appendix B.

3.0 SITE RESTORATION

The area of UST 765A and OWS 765B was restored by December 18, 1998. Restoration began by backfilling the excavations in one-foot lifts with the excavated material compacted with a backhoe-mounted sheepsfoot roller. Field density tests were performed using a Nuclear Gauge (ASTM D 2922) to achieve 90% relative compaction. Field density tests and the modified proctor test data are presented in Appendix D.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on our sampling, analysis, and observations, we conclude that:

- One (1) UST and one (1) OWS were removed and disposed in accordance with the approved Work Plan dated November 6, 1998.
- Post removal investigation of the UST and OWS showed no deterioration in the material of the UST and OWS.
- There was no evidence of spillage or areas of heavy stains observed in the excavation or in the stockpile.
- There was no groundwater encountered in the excavation.

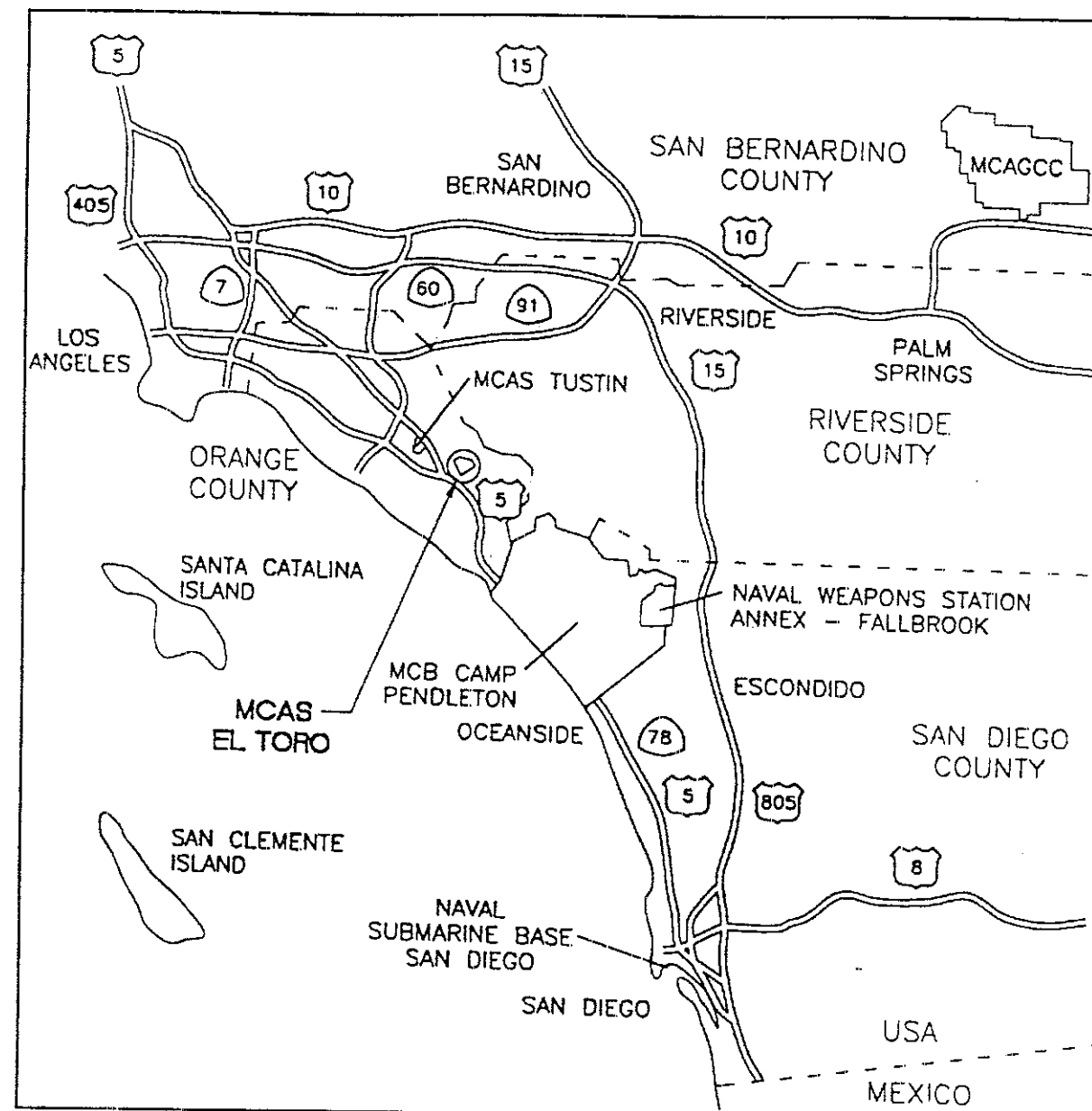
- The soil samples obtained from the bottom of the excavation and the soil stockpile detected concentrations of TRPH at 969 mg/kg and 5,680 mg/kg, respectively.
- Verbal approvals were accorded by the RPM and the AROICC to backfill the excavation.
- Based on the findings presented in this report, we recommend no further action status for the site of UST 765A and OWS 765B.

5.0 LIMITATIONS

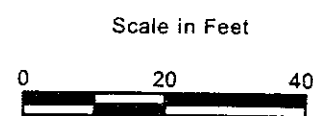
The investigative results of this report represent conditions at the specific time and location at which soil and tank content samples were obtained and for the parameters analyzed for by the independent laboratory. The laboratory data presented in this report was prepared under the direction and management of the independent laboratory and it is solely responsible for the contents and conclusions of the data presented.

The work described herein has been performed by GEOFON, Inc., and its licensed or certified subcontractors. The work has been performed in accordance with the professional standards and practices currently accepted in the Environmental Industry. No other representations, expressed or implied, and no warranty or guarantee is included in this report.

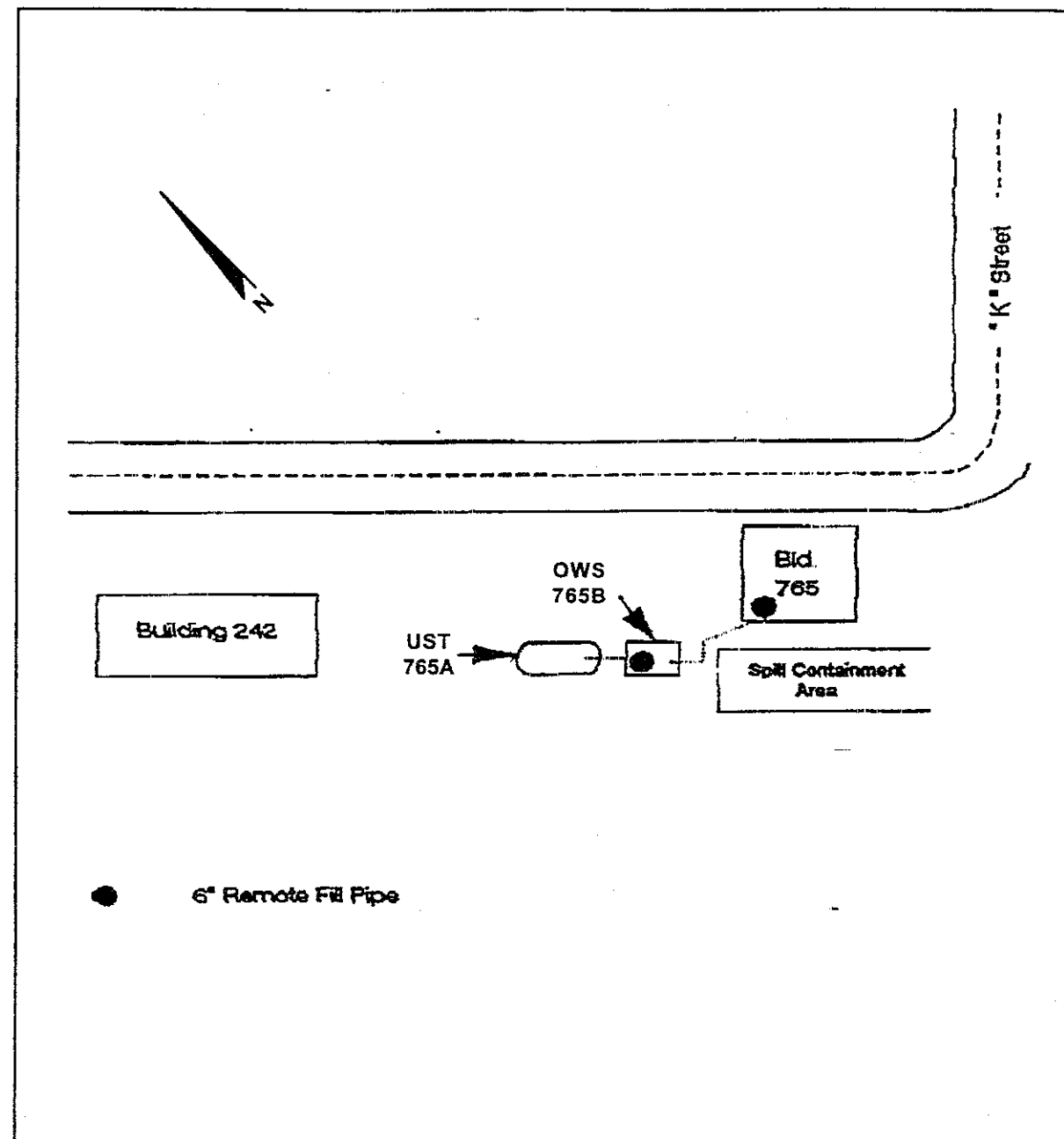
FIGURES



Reference: UST Removal Plans
prepared by Klienfelder



	PROJECT NO.:
	97-404.190
PROJECT VICINITY MAP	
12/98	Figure 1



Reference: EG&G Idaho Inc.

	PROJECT NO.:
	97-404.190
SITE LOCATION MAP UST 765A AND OWS 765B	

Not To Scale

1/99

Figure 2

TABLES

TABLE 1 - SUMMARY OF SOIL SAMPLE ANALYSES

Sample Number Date			765-A 12/14/98	765-B 12/14/98
	Units	DL		
TRPH (EPA Method 418.1)	mg/kg	10	969	5,680
VOCs (EPA Method 8260B)				
sec-Butylbenzene	µg/kg	10	ND	22.8
1,2-Dichlorobenzene	µg/kg	10	ND	119
1,4-Dichlorobenzene	µg/kg	10	ND	28.7
Ethyl benzene	µg/kg	10	ND	24.8
Isopropylbezene	µg/kg	10	ND	12.5
p-Isopropylbenzene	µg/kg	10	ND	34.6
Naphthalene	µg/kg	10	ND	171
n-Propylbenzene	µg/kg	10	ND	36.2
Tetrachloroethene	µg/kg	10	ND	96.2
1,2,4-Trimethylbenzene	µg/kg	10	ND	1,580
1,3,5-Trimethylbenzene	µg/kg	10	ND	4,060
o-Xylene	µg/kg	10	ND	132
m- & p-Xylene	µg/kg	10	ND	217

Definitions: TRPH = Total recoverable petroleum hydrocarbons (Modified EPA Method 418 1)
VOCs = Volatile Organic Compounds (EPA Method 8260)
DL = Detection Limit
ND = Non-Detect

Ows 765 B
N

APPENDIX A

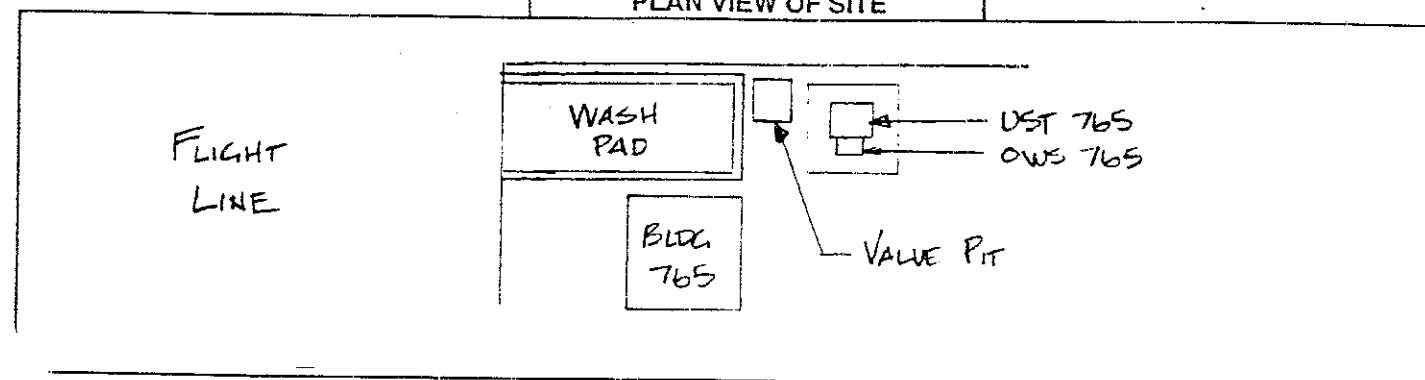
UST Removal Summary

UST REMOVAL SUMMARY

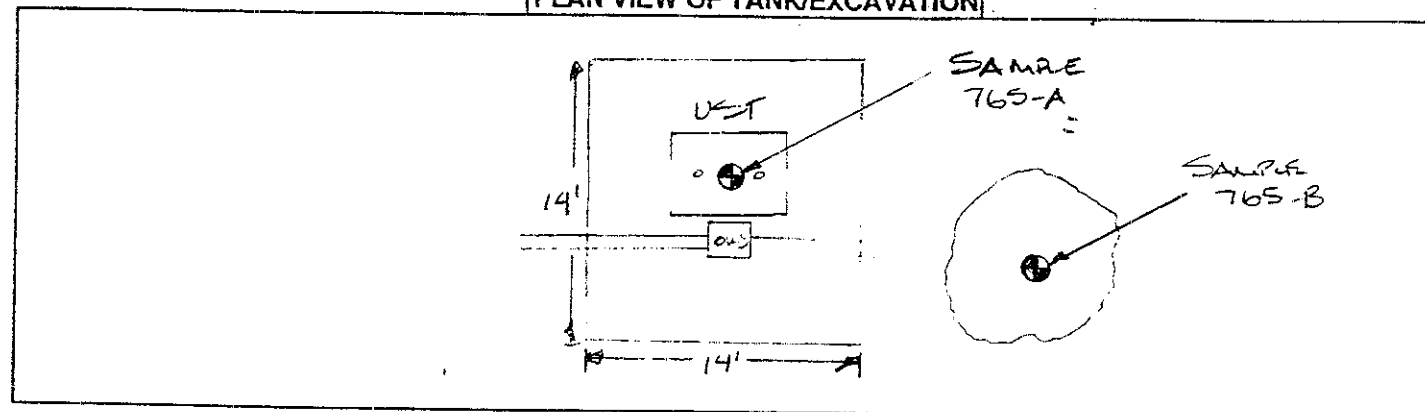
PROJECT LOCATION: MCAS EL TORO DELIVERY ORDER NO: 019 PROJECT NO: 97-404.190
TANK NO: 765

- | | | |
|------------------------------------------|---------------------------------------|------------------------------------------|
| 1) TANK CONTENT (gl): <u>500</u> | NO. OF TESTS (ea): <u>1</u> | |
| 2) EX. DIMENSION (lf): <u>14' x 14'</u> | EX. VOLUME (cu yd): <u> </u> | |
| 3) UST DIMENSIONS (lf): <u>48" x 50"</u> | UST VOLUME (gl): <u>500</u> | UST VOLUME (cu yd): <u> </u> |
| 4) VOLUME EX. SOIL (cu yd): <u>50</u> | EX. SOIL UNDER UST (cu yd): <u>0</u> | TOTAL EX. SOIL (cu yd): <u> </u> |
| 6) TRENCH (lf): <u>0</u> | NO. OF PIPE IN TRENCH (ea): <u>3</u> | TOTAL PIPE REMOVED (lf): <u> </u> |
| 7) NO. OF TESTS STK PILE (ea): <u>1</u> | NO. OF TESTS IN TRENCH (ea): <u>0</u> | |
| 5) MISC WORK: <u> </u> | | |

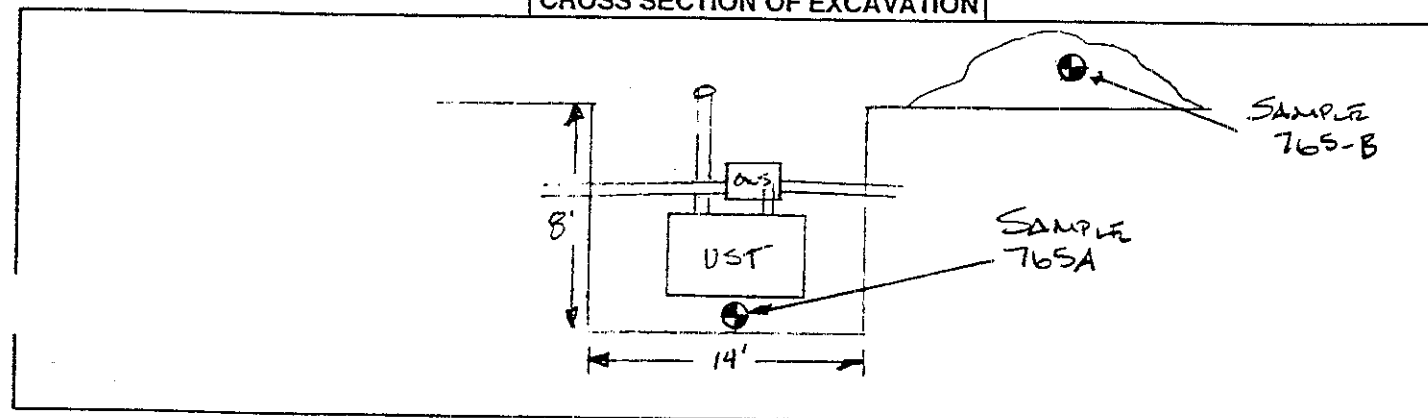
PLAN VIEW OF SITE



PLAN VIEW OF TANK/EXCAVATION

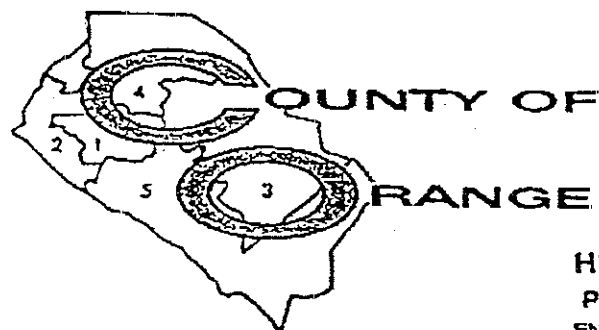


CROSS SECTION OF EXCAVATION



APPENDIX B

Removal Permit and Tank Destruction Certificates



TOM URAM
DIRECTOR
HUGH F. STALLWORTH, M.D.
HEALTH OFFICER
ENVIRONMENTAL HEALTH DIVISION
ROBERT E. MERRYMAN, REHS, MPH
DEPUTY DIRECTOR

FACILITY MODIFICATION
APPLICATION
(INSTALLATION/REMOVAL/REPAIR)
(COMPLETE PAGES 1 & 2)

HEALTH CARE AGENCY
PUBLIC HEALTH SERVICES
ENVIRONMENTAL HEALTH DIVISION
2009 E. EDINGER AVENUE
SANTA ANA, CALIFORNIA 92705
(714) 667-3700

DATE: OCT. 28, 1998

FACILITY INFORMATION

NAME: POILL OFFICE, MLAS EL TORO
STREET ADDRESS: P.O. Box 94004 Bldg T-2006
CITY: SANTA ANA, CA. 92709-4004

TOTAL NUMBER OF TANKS (AFTER INSTALLATION/REMOVAL)
AT THIS LOCATION: 3 OWS AND 4 UST

TYPE OF BUSINESS:

☐ GASOLINE STATION ☐ FARM
☒ GOVERNMENT ☐ OTHER

TANK OWNER NAME (CORP., INDIVIDUAL, PUBLIC AGENCY):
U.S. NAVY (SUBDIV), NFEL
POILL OFFICE, MLAS EL TORO

STREET ADDRESS: Bldg T-2006 (P.O. Box 94004)

CITY: SANTA ANA

STATE: CA ZIP 92709-4004

TELEPHONE NO: (949) 726-2506

BILLING ADDRESS INFORMATION

BILL TO NAME: GEOFON, INC.

BILL TO ADDRESS: 5552 CERRITOS AVE., STE F

CITY: CYPRESS

STATE: CA ZIP 90630

TELEPHONE NO: (714) 220-2777

NOTES: NEW INSTALLATIONS, CLOSURES, REPAIRS AND SYSTEM MODIFICATIONS OF UNDERGROUND STORAGE TANKS REQUIRE THE SUBMITTAL OF (4) SETS OF PLANS TO THIS DIVISION. THESE PLANS MUST BE APPROVED PRIOR TO THE INITIATION OF ANY CONSTRUCTION OR MODIFICATION. ALL PLANS OR REPORTS REQUIRED MUST ACCOMPANY THIS FORM AT THE TIME OF SUBMITTAL.

PLAN APPROVAL AND FEES ARE VALID FOR ONE YEAR. IF TANKS HAVE NOT BEEN REMOVED, INSTALLED OR MODIFIED WITHIN ONE YEAR OF THE APPROVAL DATE, NEW PLANS AND FEES MUST BE SUBMITTED.

TYPE OF CONSTRUCTION

INDICATE NO. OF TANK(S) BEING
REMOVED/REPAIRED/INSTALLED BELOW: (COMPLETE
PAGE 2 - INDICATING THE TANKS TO BE
INSTALLED/REMOVED, OR AFFECTED BY THE REPAIR)

☐ INSTALLATION(S)
☐ REPAIR(S)/RELINE(S) TO UST:
☒ CLOSURE(S)/REMOVAL(S)
☐ SYSTEM MODIFICATION (E.G. REPIPE, REPAIR TO PIPING)
☐ OTHER (SPECIFY) _____

24 HOUR EMERGENCY CONTACT PERSON

DAYS: ASPAR FAHEEM (714) 220-2777
NAME TELEPHONE

NIGHTS: ASPAR FAHEEM (714) 219-6344
NAME TELEPHONE

APPLICANT

NAME: ASPAR FAHEEM
PLEASE PRINT

SIGNATURE: [Signature]

COMPANY NAME: GEOFON, INC.

TELEPHONE NO: (714) 220-2777

FACILITY OPERATOR (CONTACT PERSON)

NAME: SCOTT KEHE

BUSINESS TELEPHONE NO: (949) 726-2506

OFFICE USE ONLY

PLAN CHECK NO. 98-490, 98-491, 98-492
98-493, 98-494 FEES PAID 11/5/98

RCVD. BY: mm

CRS

11/5/98 HSO# 153364

TANK INFORMATION

PROVIDE THE INFORMATION BELOW FOR ALL TANKS AND PIPING SYSTEMS TO BE INSTALLED, REMOVED OR REPAIRED. ALSO INDICATE THE UPGRADE/CHANGES TO BE MADE TO EACH TANK SYSTEM.

TANK I.D.			797	765A	765B	766B
MATERIAL STORED	MATERIAL OR WASTE STORED	CURRENTLY	EMPTY	EMPTY	EMPTY	EMPTY
		PROPOSED				
		PREVIOUSLY	AVIATION GASOLINE	WASTE OIL	OIL/ WATER	WASTE OIL
FUEL TYPE, I.E., UNLEADED						
TYPE (TANK, SUMP, OTHERS)			UST	UST	OWS	UST
DOUBLE WALL/SINGLE WALL			-	-	-	-
UL NUMBER			-	-	-	-
YEAR INSTALLED			1985	1982	1982	1982
VAULTED/NOT VAULTED			VAULTED	VAULTED	VAULTED	VAULTED
PRIMARY	MANUFACTURER		-	-	-	-
	CAPACITY (GALLONS)		10,000	185	100	00
	CONSTRUCTION MATERIAL		APPROVED			
	THICKNESS (UNITS)		APPROVED			
SECONDARY	INTERIOR LINING		ORANGE COUNTY HEALTH CARE AGENCY HAZARDOUS MATERIALS MANAGEMENT SECTION THIS APPROVAL IS VALID FOR 12 MONTHS FROM THE APPROVAL DATE			
	MANUFACTURER		HAZARDOUS MATERIALS MANAGEMENT SECTION			
	CAPACITY (GALLONS)		LESS APPROVAL IS VALID FOR 12 MONTHS FROM THE APPROVAL DATE			
	CONSTRUCTION MATERIAL		APPROVED			
THICKNESS (UNITS)			APPROVED			
CORROSION PROTECTION			This approval shall not be construed to the violation of any law, nor does it Further corrections of errors found plans. Plans must be resubmitted for approval if any additional changes are made by the applicant.			
LOCATION (UNDER/ABOVE GROUND)			In addition to this approval, all approvals building department, and the Air Quality Management District must be obtained.			
SUCTION/PRESSURE GRAVITY/UNKNOWN			UNKNOWN			
PRIMARY	CONSTRUCTION MATERIAL		Underground tank installation, removal, and repair inspections are required and must be scheduled in advance. Contact (714) 667-3703 for an appointment.			
	MANUFACTURER					
SECONDARY	CONSTRUCTION MATERIAL					
	MANUFACTURER					
TYPE OF LEAK DETECTION FOR PIPING (PRESSURE LOSS DEVICE, ETC.)			A copy of these approved plans must be available at the site at all times.			
MANUFACTURER OF LEAK DETECTOR			If piping associated with underground storage tanks shall be removed and properly disposed of			
VERFILL PROTECTION (TYPE)						
SPILL CONTAINMENT (TYPE)						

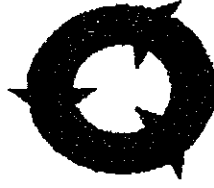
TANK INFORMATION

PROVIDE THE INFORMATION BELOW FOR ALL TANKS AND PIPING SYSTEMS TO BE INSTALLED, REMOVED OR REPAIRED. ALSO INDICATE THE UPGRADE/CHANGES TO BE MADE TO EACH TANK SYSTEM.

TANK I.D.			766A	655 B	673 A
MATERIAL STORED	MATERIAL OR WASTE STORED	CURRENTLY	EMPTY	EMPTY	EMPTY
		PROPOSED			
		PREVIOUSLY	OIL/WATER	WASTE OIL	OIL/WATER
FUEL TYPE, I.E. UNLEADED					
TYPE (TANK, SUMP, OTHERS)			OWS	UST	OWS
DOUBLE WALL/SINGLE WALL			—	—	—
UL NUMBER			—	—	—
YEAR INSTALLED			1982	1972	1982
VAULTED/NOT VAULTED			VAULTED	VAULTED	VAULTED
PRIMARY	MANUFACTURER		—	—	—
	CAPACITY (GALLONS)		—	—	—
	CONSTRUCTION MATERIAL		—	—	—
	THICKNESS (UNITS)		—	—	—
	INTERIOR LINING		—	—	—
SECONDARY	MANUFACTURER		—	—	—
	CAPACITY (GALLONS)		—	—	—
	CONSTRUCTION MATERIAL		—	—	—
	THICKNESS (UNITS)		—	—	—
CORROSION PROTECTION			—	—	—
TYPE OF LEAK DETECTION FOR USTs (LIQUID, PROBE, ETC.)			—	—	—
MANUFACTURER OF LEAK DETECTOR			—	—	—
LOCATION (UNDER/ABOVE GROUND)					
SUCTION/PRESSURE GRAVITY/UNKNOWN			UNKNOWN	UNKNOWN	UNKNOWN
PRIMARY	CONSTRUCTION MATERIAL				
	MANUFACTURER		—	—	—
SECONDARY	CONSTRUCTION MATERIAL		—	—	—
	MANUFACTURER		—	—	—
TYPE OF LEAK DETECTION FOR PIPING (PRESSURE LOSS DEVICE, ETC.)					
MANUFACTURER OF LEAK DETECTOR					
OVERFILL PROTECTION (TYPE)					
SPILL CONTAINMENT (TYPE)					

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802. WITHIN CALIFORNIA, CALL 1-800-852-7550

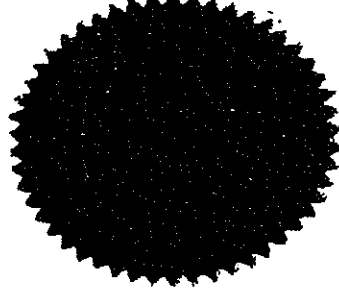
UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. — Manifest Document No. —		2. Page 1		Information in the shaded areas is not required by Federal law	
3. Generator's Name and Mailing Address COMMANDING GENERAL MCAS EL TORO SANTA ANA, CA. 92518-5001		4. Generator's Phone (949) 726-2772		5. Transporter 1 Company Name EFFR ENVIRONMENTAL SERVICES		6. US EPA ID Number (C) A (R) C (O) O (I) I (I) 2 (O) 5	
7. Transporter 2 Company Name		8. US EPA ID Number		9. Designated Facility Name and Site Address HEMENNO/KERIDON 2000 N. ALAMEDA ST. COMPTON, CA 90222		10. US EPA ID Number (C) A (T) O (S) O (I) 3 (3) 5 (2)	
11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)		12. Containers No. Type		13. Total Quantity		14. Unit Wt/Vol	
a. NON-RCRA HAZARDOUS WASTE LIQUID (OILY WATER)		001 T T U R R A O		G			
b.		1 1 1 1 1 1 1 1		1 1 1 1 1 1 1 1			
c.		1 1 1 1 1 1 1 1		1 1 1 1 1 1 1 1			
d.		1 1 1 1 1 1 1 1		1 1 1 1 1 1 1 1			
15. Special Handling Instructions and Additional Information ALWAYS WEAR APPROPRIATE FIRE AND CORRUPTIVE HANDLING METHODS! 1. HAZARDOUS EMERGENCY 800-424-8802 (CHEM TECH)		16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I complied.		17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name: JOHN D. DRISDA Signature: <i>John Drisdorn</i> Month: 12 Day: 03 Year: 91		18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name: Signature: Month: Day: Year:	
19. Discrepancy Indication Space		20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19. Printed/Typed Name: JOHN DRISDA Signature: <i>John Drisdorn</i> Month: 12 Day: 14 Year: 91		DO NOT WRITE BELOW THIS LINE.			



**EFR ENVIRONMENTAL SERVICES
CERTIFICATE OF RECYCLING**

EFR Environmental Services certifies that the waste accepted from the generator described below was recycled in accordance with the United States EPA and State Regulations:

GENERATOR: COMMANDING GENERAL
MCAS EL TORO
SANTA ANA, CA 92518-5001



DATE:	INVOICE #	DESCRIPTION:	QUANTITY:
12/08/88	15594	11a. STEEL TANK DESTRUCTION & DISPOSAL	3 - 500 GALLON
12/08/88	15594	11b. OIL/WATER SEPARATORS	2 - 160 GALLON

PLEASE NOTE THAT THE TANK LISTED ABOVE WAS TAKEN TO PACIFIC COAST RECYCLING

If this information does not agree with your records, please notify us within 10 days so we can resolve any discrepancies.
Phone Number (800) 244-1202 or (760) 735-9602

Thank You for your using **EFR Environmental Services** for your recycling needs!

APPENDIX C

Laboratory Reports and Chain-of-Custody Forms



American Environmental Testing Laboratory Inc.

2834 North Naomi Street Burbank CA 91504 • DOHS NO: 1541 LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840

Geofon Inc.
5552 Cerritos Ave. Suite F
Cypress, CA 90630

Number of Pages: 20
Date Received : 12/14/98
Date Reported : 12/15/98

Attn : Chris Payne
Phone: 714/220-2777

AETL Job Number: 11270

Project Name : El Toro # 3
Project Number : 97-404.190

Site: MCAS EL-Toro, Ca.
Bldgs 766, 765 & 655

Enclosed please find results of analyses of 6 soil samples which were analyzed as specified on the attached chain of custody. If there are any questions, please do not hesitate to call.

Checked By:

Jol Scurran

Approved By:

C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

Job 11270

1. ALL SAMPLES ARE TO BE HANDLED AS COURT EVIDENCE, AND ARE TO BE PROPERLY STORED IN A SECURE LOCATION.
2. PLEASE WRITE LEGIBLY.
3. ATTACH THIS FORM TO THE ORIGINAL REPORT OF THE ANALYTICAL RESULTS AND RETURN THEM TO THIS OFFICE. LABORATORY RESULTS RECEIVED WITHOUT PROPER CHAIN OF CUSTODY DOCUMENTATION WILL NOT BE ACCEPTED.

4. TO BE COMPLETED BY LABORATORY ANALYST

LAB NO.: 1541

DATE RECEIVED: 12-14-98

SAMPLE(S) CONDITION (PLEASE CHECK):

CHILLED: X COUNTY SEAL(S) INTACT: X

CONTAINER IN GOOD CONDITION: X

DATE ANALYSIS COMPLETED: 12-16-98

ANALYST: Joe Seuren

5. TO BE COMPLETED BY SAMPLE COLLECTOR

SITE NAME/ADDRESS: MCRAS EITDRO
TANK # 765A + OWS # 765B, Santa Ana

DATE OF COLLECTION: 12-14-98

SAMPLE COLLECTOR/COMPANY: C. Payne
Geofon

TELEPHONE NO.: _____

HCA REPRESENTATIVE: A. Pashidi-Land

6.

SAMPLE NUMBER	DETERMINATION REQUESTED	SAMPLE DESCRIPTION/COMMENTS	TIME OF COLLECTION
5128 765A	TRPH(418-1)	if results equal or exceed 100ppm, then	10:50am
5131 765B	↓ analyze by method 8260 ↓	↓ ↓	

7.

CHAIN OF CUSTODY		
1. <u>A. Pashidi-Land</u> SIGNATURE	<u>Haz Waste</u> COMPANY/AGENCY	<u>12-14-98 - 11:30am</u> INCLUSIVE DATES/TIMES
2. <u>[Signature]</u> SIGNATURE	<u>Geofon</u> COMPANY/AGENCY	<u>12-14-98 - 11:30a.</u> INCLUSIVE DATES/TIMES
3. _____ SIGNATURE	_____ COMPANY/AGENCY	_____ INCLUSIVE DATES/TIMES
4. <u>MACHACCOYAN</u> SIGNATURE	<u>AETL</u> COMPANY/AGENCY	<u>12/14/98 - 3:20</u> INCLUSIVE DATES/TIMES
5. <u>[Signature]</u> SIGNATURE	<u>AETL</u> COMPANY/AGENCY	<u>12/14/98 - 1700</u> INCLUSIVE DATES/TIMES
6. _____ SIGNATURE	_____ COMPANY/AGENCY	_____ INCLUSIVE DATES/TIMES



American Environmental Testing Laboratory Inc.

2834 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840

2

SUMMARY OF RESULTS


CLIENT NAME: Geofon Inc
5552 Cerritos Ave., Suite F
Cypress, CA 90630

AETL JOB NO.: 11270

PROJECT: El Toro #3, 97404.190
SITE: MCAS El Toro, Bldg. #766, 765, 655, Santa Ana
DATE SAMPLED: 12-14-98
DATE SUBMITTED: 12-14-98
DATE ANALYSIS COMPLETED: 12-15-98
SAMPLE DESCRIPTION: Grab soil samples (For details, please see COC)
SAMPLE MATRIX: Soil
NOTE: Samples were collected by client

ANALYTE		TRPH
UNIT		mg/Kg
METHOD OF ANALYSIS		418.1
DETECTION LIMIT		10
LAB ID	FIELD ID	RESULTS
AE55126	766-1	ND
AE55127	766-2	77
AE55128	765-A	969
AE55129	655-B-2	5,940
AE55130	655-B-1	238
AE55131	765-B	5,680
AE55132	Method Blank	ND

ND = Not Detected at the detection limit


Cyrus Razmara, Ph.D.
Laboratory Director



American Environmental Testing Laboratory Inc.

2834 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840

3

SUMMARY OF RESULTS

CLIENT NAME: Geofon Inc.
5552 Cerritos Ave., Suite F
Cypress, CA 90630

AETL JOB NO.: 11270

PROJECT: El Toro #3, 97404 190

SITE: MCAS El Toro, Bldg #766, 765, 655, Santa Ana

DATE SAMPLED: 12-14-98

DATE SUBMITTED: 12-14-98

DATE ANALYSIS COMPLETED: 12-16-98

SAMPLE DESCRIPTION: Grab soil samples (For details, please see COC)

SAMPLE MATRIX: Soil

NOTE: Samples were collected by client

EPA Method 8260B

Lab ID	AE55128	AE55129	AE55130	AE55131	AE55132
Client ID	765-A	655-B-2	655-B-1	765-B	M. Blank
Date Sampled	12-14-98	12-14-98	12-14-98	12-14-98	12-14-98
Date Extracted	12-16-98	12-16-98	12-16-98	12-16-98	12-16-98
Date Analyzed	12-16-98	12-16-98	12-16-98	12-16-98	12-16-98
Matrix	Soil	Soil	Soil	Soil	Soil
Units	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg
Dilution Factor	1	1	1	1	1
Analyte	DL	Results	Results	Results	Results
Acetone	50	ND	178	ND	ND
Benzene	10	ND	ND	ND	ND
Bromobenzene	10	ND	ND	ND	ND
Bromochloromethane	10	ND	ND	ND	ND
Bromodichloromethane	10	ND	ND	ND	ND
Bromoform	50	ND	ND	ND	ND
Bromomethane	30	ND	ND	ND	ND
2-Butanone	50	ND	ND	ND	ND
n-Butylbenzene	10	ND	ND	ND	ND
sec-Butylbenzene	10	ND	40.2	ND	22.8
tert-Butylbenzene	10	ND	ND	ND	ND
Carbon Disulfide	10	ND	ND	ND	ND
Carbon Tetrachloride	10	ND	ND	ND	ND
Chlorobenzene	10	ND	ND	ND	ND
Chloroethane	30	ND	ND	ND	ND
2-Chloroethyl Vinyl ether	50	ND	ND	ND	ND
Chloroform	10	ND	ND	ND	ND
Chloromethane	30	ND	ND	ND	ND
2-Chlorotoluene	10	ND	ND	ND	ND
4-Chlorotoluene	10	ND	ND	ND	ND
1,2-Dibromo-3-Chloropropane	50	ND	ND	ND	ND
Dibromochloromethane	10	ND	ND	ND	ND
1,2-Dibromoethane	10	ND	ND	ND	ND
Dibromomethane	10	ND	ND	ND	ND
1,2-Dichlorobenzene	10	ND	ND	ND	119
1,3-Dichlorobenzene	10	ND	ND	ND	ND
1,4-Dichlorobenzene	10	ND	ND	ND	28.7
Dichlorodifluoromethane	30	ND	ND	ND	ND
1,1-Dichloroethane	10	ND	ND	ND	ND
1,2-Dichloroethane	10	ND	ND	ND	ND
1,1-Dichloroethene	10	ND	ND	ND	ND

ND = Not Detected at the detection limit

DL = Detection Limit



American Environmental Testing Laboratory Inc.

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4

SUMMARY OF RESULTS

CLIENT NAME: Geofon Inc.
555 Cerritos Ave., Suite F
Cypress, CA 90630


AETL JOB NO.: 11270

EPA Method 8260B (Cont...)

Lab ID	AE55128	AE55129	AE55130	AE55131	AE55132
Client ID	765-A	655-B-2	655-B-1	765-B	M. Blank
Date Sampled	12-14-98	12-14-98	12-14-98	12-14-98	12-14-98
Date Extracted	12-16-98	12-16-98	12-16-98	12-16-98	12-16-98
Date Analyzed	12-16-98	12-16-98	12-16-98	12-16-98	12-16-98
Matrix	Soil	Soil	Soil	Soil	Soil
Units	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg
Dilution Factor	1	1	1	1	1
Analyte	DL	Results	Results	Results	Results
cis-1,2-Dichloroethene	10	ND	ND	ND	ND
trans-1,2-Dichloroethene	10	ND	ND	ND	ND
1,2-Dichloropropane	10	ND	ND	ND	ND
1,3-Dichloropropane	10	ND	ND	ND	ND
2,2-Dichloropropane	10	ND	ND	ND	ND
1,1-Dichloropropene	10	ND	ND	ND	ND
cis-1,3-Dichloropropene	10	ND	ND	ND	ND
trans-1,3-Dichloropropene	10	ND	ND	ND	ND
Ethylbenzene	10	ND	15.1	ND	24.8
Hexachlorobutadiene	30	ND	ND	ND	ND
2-Hexanone	50	ND	ND	ND	ND
Isopropylbenzene	10	ND	13.6	ND	12.5
p-Isopropyltoluene	10	ND	102	ND	34.6
MTBE	10	ND	ND	ND	ND
4-Methyl-2-Pentanone	50	ND	ND	ND	ND
Methylene Chloride	50	ND	ND	ND	ND
Naphthalene	10	ND	176	ND	171
n-Propylbenzene	10	ND	29.5	ND	36.2
Styrene	10	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	10	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	10	ND	ND	ND	ND
Tetrachloroethene	10	ND	ND	ND	96.2
Toluene	10	ND	ND	ND	ND
1,2,3-Trichlorobenzene	10	ND	ND	ND	ND
1,2,4-Trichlorobenzene	10	ND	ND	ND	ND
1,1,1-Trichloroethane	10	ND	ND	ND	ND
1,1,2-Trichloroethane	10	ND	ND	ND	ND
Trichloroethene	10	ND	ND	ND	ND
Trichlorofluoromethane	10	ND	ND	ND	ND
1,2,3-Trichloropropane	10	ND	ND	ND	ND
1,2,4-Trimethylbenzene	10	ND	438	ND	1,580
1,3,5-Trimethylbenzene	10	ND	55.4	ND	4,060
Vinyl Acetate	50	ND	ND	ND	ND
Vinyl Chloride	30	ND	ND	ND	ND
o-Xylene	10	ND	ND	ND	132
m- & p-Xylenes	20	ND	ND	ND	217

ND = Not Detected at the detection limit

DL = Detection Limit


Cyrus Razmara, Ph. D
Laboratory Director



American Environmental Testing Laboratory Inc.

2834 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840

ANALYTICAL RESULTS

AETL Job No: 11270
Project ID: 97-404.190
Project Name: El Toro # 3

Page: 6

Report To: (GEOFON)
Geofon Inc.
5552 Cerritos Ave. Suite F
Cypress, CA 90630

Site:
MCAS EL Toro, Ca.
Bldgs 766, 765 & 655

Attn: Chris Payne

Phone: 714/220-2777

Matrix: Soil
Method: (418.1)
Total Recoverable Petroleum Hydrocarbons
Units: mg/Kg

Lab ID:	AE55128	
Sample No:	765-A	
Date Sampled:	12/14/98	
Date Extracted:	12/15/98	Detection
Date Analyzed:	12/15/98	Limit

TRPH	969	150
------	-----	-----

QUALITY CONTROL SUMMARY

	Spike %REC.	Spike DUP. %REC.	AVG. RPD
TRPH	92	93	1.1



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ANALYTICAL RESULTS

Page: 9

AETL Job No: 11270
Project ID: 97-404.190
Project Name: El Toro # 3

Report To: (GEOFON)
Geofon Inc.
5552 Cerritos Ave. Suite F
Cypress, CA 90630

Site:
MCAS EL Toro, Ca.
Bldgs 766, 765 & 655

Attn: Chris Payne

Phone: 714/220-2777

Matrix: Soil
Method: (418.1)
Total Recoverable Petroleum Hydrocarbons
Units: mg/Kg

Lab ID:	AE55131	
Sample No:	765-B	
Date Sampled:	12/14/98	
Date Extracted:	12/15/98	Detection
Date Analyzed:	12/15/98	Limit

IRPH	5680	1000
------	------	------

QUALITY CONTROL SUMMARY

	Spike %REC.	Spike DUP. %REC.	AVG. RPD
TRPH	92	93	1.1



American Environmental Testing Laboratory Inc.

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ANALYTICAL RESULTS

AETL Job No: 11270
Project ID: 97-404.190
Project Name: El Toro # 3

Page: 10

Report To: (GEOFON)
Geofon Inc.
5552 Cerritos Ave. Suite F
Cypress, CA 90630

Site:
MCAS EL Toro, Ca.
Bldgs 766, 765 & 655

Attn: Chris Payne

Phone: 714/220-2777

Matrix: Soil
Method: (418.1)
Total Recoverable Petroleum Hydrocarbons
Units: mg/Kg

Lab ID:	AE55132	
Sample No:	METHOD BLANK	
Date Sampled:	12/14/98	
Date Extracted:	12/15/98	Detection
Date Analyzed:	12/15/98	Limit

TRPH	ND	10
------	----	----

QUALITY CONTROL SUMMARY

	Spike %REC.	Spike DUP. %REC.	AVG. RPD
TRPH	92	93	1.1

ND - Not Detected at The Detection Limit



American Environmental Testing Laboratory Inc.

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ANALYTICAL RESULTS

AETL Job No: 11270
Project ID: 97-404.190
Project Name: El Toro # 3

Page: 11

Report To: (GEOFON)
Geofon Inc.
5552 Cerritos Ave. Suite F
Cypress, CA 90630

Site:
MCAS EL Toro, Ca.
Bldgs 766,765 & 655

Attn: Chris Payne

Phone: 714/220-2777

Matrix: Soil
Method: 8260
Purgeable Volatile Organics by GC/MS
Units: ug/kg

Lab ID:	AE55128	
Sample No:	765-A	
Date Sampled:	12/14/98	
Date Extracted:	12/16/98	Detection
Date Analyzed:	12/16/98	Limit

Acetone	ND	50
Benzene	ND	10
Bromobenzene	ND	10
Bromochloromethane	ND	10
Bromodichloromethane	ND	10
Bromoform	ND	50
Bromomethane	ND	30
2 Butanone	ND	50
N Butylbenzene	ND	10
SEC Butylbenzene	ND	10
TERT Butylbenzene	ND	10
Carbon Disulfide	ND	10
Carbon Tetrachloride	ND	10
Chlorobenzene	ND	10
Chloroethane	ND	30
2 Chloroethyl Vinyl ether	ND	50
Chloroform	ND	10
Chloromethane	ND	30
2 Chlorotoluene	ND	10
4 Chlorotoluene	ND	10
1,2 Dibromo-3-Chloropropane	ND	50
Dibromochloromethane	ND	10
1,2 Dibromoethane	ND	10
Dibromomethane	ND	10
1,2 Dichlorobenzene	ND	10
1,3 Dichlorobenzene	ND	10
1,4 Dichlorobenzene	ND	10
Dichlorodifluoromethane	ND	30
1,1 Dichloroethane	ND	10
1,2 Dichloroethane	ND	10
1,1 Dichloroethene	ND	10
CIS 1,2 Dichloroethene	ND	10
TRANS 1,2 Dichloroethene	ND	10
1,2 Dichloropropane	ND	10
1,3 Dichloropropane	ND	10
2,2 Dichloropropane	ND	10
1,1 Dichloropropene	ND	10
CIS 1,3 Dichloropropene	ND	10
TRANS 1,3 Dichloropropene	ND	10
Ethylbenzene	ND	10
Hexachlorobutadiene	ND	30
2 Hexanone	ND	50
(Continued)		

ND - Not Detected at The Detection Limit



American Environmental Testing Laboratory Inc.

2834 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840

ANALYTICAL RESULTS

AETL Job No: 11270
Project ID: 97-404.190
Project Name: El Toro # 3

Units: ug/kg

Lab ID:	AE55128	Detection
Sample No:	765-A	Limit
Isopropylbenzene	ND	10
P- Isopropyltoluene	ND	10
MTBE	ND	10
4 Methyl-2-Pentanone	ND	50
Methylene Chloride	ND	50
Naphthalene	ND	10
N- Propylbenzene	ND	10
Styrene	ND	10
1,1,1,2 Tetrachloroethane	ND	10
1,1,2,2 Tetrachloroethane	ND	10
Tetrachloroethene	ND	10
Toluene	ND	10
1,2,3 Trichlorobenzene	ND	10
1,2,4 Trichlorobenzene	ND	10
1,1,1 Trichloroethane	ND	10
1,1,2 Trichloroethane	ND	10
Trichloroethene	ND	10
Trichlorofluoromethane	ND	10
1,2,3 Trichloropropane	ND	10
1,2,4 Trimethylbenzene	ND	10
1,3,5 Trimethylbenzene	ND	10
Vinyl Acetate	ND	50
Vinyl Chloride	ND	30
O- Xylene	ND	10
M- & P- Xylenes	ND	20

QUALITY CONTROL SUMMARY

Lab ID: AE55128

Surrogate Percent Recovery

Bromofluorobenzene	147
Dibromofluoromethane	108
Toluene-d8	79

	Spike %REC.	Spike DUP. %REC.	AVG. RPD
Benzene	98	92	6
Chlorobenzene	99	91	8
1,1 Dichloroethene	95	89	6
Toluene	96	89	8
Trichloroethene	93	86	8

Comment to Sample(s)

AE55128: High surrogate recovery due to matrix interference.

ND - Not Detected at The Detection Limit



American Environmental Testing Laboratory Inc.

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ANALYTICAL RESULTS

AETL Job No: 11270
Project ID: 97-404.190
Project Name: El Toro # 3

Page: 17

Report To: (GEOFON)
Geofon Inc.
5552 Cerritos Ave. Suite F
Cypress, CA 90630

Site:
MCAS EL Toro, Ca.
Bldgs 766,765 & 655

Attn: Chris Payne

Phone: 714/220-2777

Matrix: Soil
Method: 8260
Purgeable Volatile Organics by GC/MS
Units: ug/kg

Lab ID:	AE55131	
Sample No:	765-B	
Date Sampled:	12/14/98	
Date Extracted:	12/16/98	Detection
Date Analyzed:	12/16/98	Limit

Acetone	ND	50
Benzene	ND	10
Bromobenzene	ND	10
Bromochloromethane	ND	10
Bromodichloromethane	ND	10
Bromoform	ND	50
Bromomethane	ND	30
2 Butanone	ND	50
N Butylbenzene	ND	10
SEC Butylbenzene	22.8	10
TERT Butylbenzene	ND	10
Carbon Disulfide	ND	10
Carbon Tetrachloride	ND	10
Chlorobenzene	ND	10
Chloroethane	ND	30
2 Chloroethyl Vinylether	ND	50
Chloroform	ND	10
Chloromethane	ND	30
2 Chlorotoluene	ND	10
4 Chlorotoluene	ND	10
1,2 Dibromo-3-Chloropropane	ND	50
Dibromochloromethane	ND	10
1,2 Dibromoethane	ND	10
Dibromomethane	ND	10
1,2 Dichlorobenzene	119	10
1,3 Dichlorobenzene	ND	10
1,4 Dichlorobenzene	28.7	10
Dichlorodifluoromethane	ND	30
1,1 Dichloroethane	ND	10
1,2 Dichloroethane	ND	10
1,1 Dichloroethene	ND	10
CIS 1,2 Dichloroethene	ND	10
TRANS 1,2 Dichloroethene	ND	10
1,2 Dichloropropane	ND	10
1,3 Dichloropropane	ND	10
2,2 Dichloropropane	ND	10
1,1 Dichloropropene	ND	10
CIS 1,3 Dichloropropene	ND	10
TRANS 1,3 Dichloropropene	ND	10
Ethylbenzene	24.8	10
Hexachlorobutadiene	ND	30
2 Hexanone	ND	50

(Continued)

ND - Not Detected at The Detection Limit



American Environmental Testing Laboratory Inc.

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ANALYTICAL RESULTS

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AETL Job No: 11270
Project ID: 97-404.190
Project Name: El Toro # 3

Units: ug/kg

Lab ID:	AE55131	Detection
Sample No:	765-B	Limit
Isopropylbenzene	12.5	10
P- Isopropyltoluene	34.6	10
MTBE	ND	10
4 Methyl-2-Pentanone	ND	50
Methylene Chloride	ND	50
Naphthalene	171	10
N- Propylbenzene	36.2	10
Styrene	ND	10
1,1,1,2 Tetrachloroethane	ND	10
1,1,2,2 Tetrachloroethane	ND	10
Tetrachloroethene	96.2	10
Toluene	ND	10
1,2,3 Trichlorobenzene	ND	10
1,2,4 Trichlorobenzene	ND	10
1,1,1 Trichloroethane	ND	10
1,1,2 Trichloroethane	ND	10
Trichloroethene	ND	10
Trichlorofluoromethane	ND	10
1,2,3 Trichloropropane	ND	10
1,2,4 Trimethylbenzene	1580	200
1,3,5 Trimethylbenzene	4060	200
Vinyl Acetate	ND	50
Vinyl Chloride	ND	30
O- Xylene	132	10
M- & P- Xylenes	217	20

QUALITY CONTROL SUMMARY

Lab ID: AE55131

Surrogate Percent Recovery

Bromofluorobenzene	133
Dibromofluoromethane	103
Toluene-d8	91

	Spike %REC.	Spike DUP. %REC.	AVG. RPD
Benzene	98	92	6
Chlorobenzene	99	91	8
1,1 Dichloroethene	95	89	6
Toluene	96	89	8
Trichloroethene	93	86	8

Comment to Sample(s)

AE55131: High surrogate recovery due to matrix interference.

ND - Not Detected at The Detection Limit



American Environmental Testing Laboratory Inc.

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ANALYTICAL RESULTS

AETL Job No: 11270
Project ID: 97-404.190
Project Name: El Toro # 3

Page: 19

Report To: (GEOFON)
Geofon Inc.
5552 Cerritos Ave., Suite F
Cypress, CA 90630

Site:
MCAS EL Toro, Ca.
Bldgs 766, 765 & 655

Attn: Chris Payne

Phone: 714/220-2777

Matrix: Soil
Method: 8260
Purgeable Volatile Organics by GC/MS
Units: ug/kg

Lab ID:	AE55132	
Sample No:	METHOD BLANK	
Date Sampled:	12/14/98	
Date Extracted:	12/16/98	Detection
Date Analyzed:	12/16/98	Limit

Acetone	ND	50
Benzene	ND	10
Bromobenzene	ND	10
Bromochloromethane	ND	10
Bromodichloromethane	ND	10
Bromoform	ND	50
Bromomethane	ND	30
2 Butanone	ND	50
N Butylbenzene	ND	10
SEC Butylbenzene	ND	10
TERT Butylbenzene	ND	10
Carbon Disulfide	ND	10
Carbon Tetrachloride	ND	10
Chlorobenzene	ND	10
Chloroethane	ND	30
2 Chloroethyl Vinylether	ND	50
Chloroform	ND	10
Chloromethane	ND	30
2 Chlorotoluene	ND	10
4 Chlorotoluene	ND	10
1,2 Dibromo-3-Chloropropane	ND	50
Dibromochloromethane	ND	10
1,2 Dibromoethane	ND	10
Dibromomethane	ND	10
1,2 Dichlorobenzene	ND	10
1,3 Dichlorobenzene	ND	10
1,4 Dichlorobenzene	ND	10
Dichlorodifluoromethane	ND	30
1,1 Dichloroethane	ND	10
1,2 Dichloroethane	ND	10
1,1 Dichloroethene	ND	10
CIS 1,2 Dichloroethene	ND	10
TRNS 1,2 Dichloroethene	ND	10
1,2 Dichloropropane	ND	10
1,3 Dichloropropane	ND	10
2,2 Dichloropropane	ND	10
1,1 Dichloropropene	ND	10
CIS 1,3 Dichloropropene	ND	10
TRNS 1,3 Dichloropropene	ND	10
Ethylbenzene	ND	10
Hexachlorobutadiene	ND	30
2 Hexanone	ND	50

(Continued)

ND - Not Detected at The Detection Limit



American Environmental Testing Laboratory Inc.

2834 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541 LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840

ANALYTICAL RESULTS

AETL Job No: 11270
Project ID: 97-404.190
Project Name: El Toro # 3

Page: 20

Units: ug/kg

Lab ID: Sample No:	AE55132 METHOD BLANK	Detection Limit
Isopropylbenzene	ND	10
P- Isopropyltoluene	ND	10
MTBE	ND	10
4 Methyl-2-Pentanone	ND	50
Methylene Chloride	ND	50
Naphthalene	ND	10
N- Propylbenzene	ND	10
Styrene	ND	10
1,1,1,2 Tetrachloroethane	ND	10
1,1,2,2 Tetrachloroethane	ND	10
Tetrachloroethene	ND	10
Toluene	ND	10
1,2,3 Trichlorobenzene	ND	10
1,2,4 Trichlorobenzene	ND	10
1,1,1 Trichloroethane	ND	10
1,1,2 Trichloroethane	ND	10
Trichloroethene	ND	10
Trichlorofluoromethane	ND	10
1,2,3 Trichloropropane	ND	10
1,2,4 Trimethylbenzene	ND	10
1,3,5 Trimethylbenzene	ND	10
Vinyl Acetate	ND	50
Vinyl Chloride	ND	30
O- Xylene	ND	10
M-& P- Xylenes	ND	20

QUALITY CONTROL SUMMARY

Lab ID:	AE55132		
<u>Surrogate Percent Recovery</u>			
Bromofluorobenzene	105		
Dibromofluoromethane	96		
Toluene-d8	102		
	Spike %REC.	Spike DUP. %REC.	AVG. RPD
Benzene	98	92	6
Chlorobenzene	99	91	8
1,1 Dichloroethene	95	89	6
Toluene	96	89	8
Trichloroethene	93	86	8

ND - Not Detected at The Detection Limit

APPENDIX D

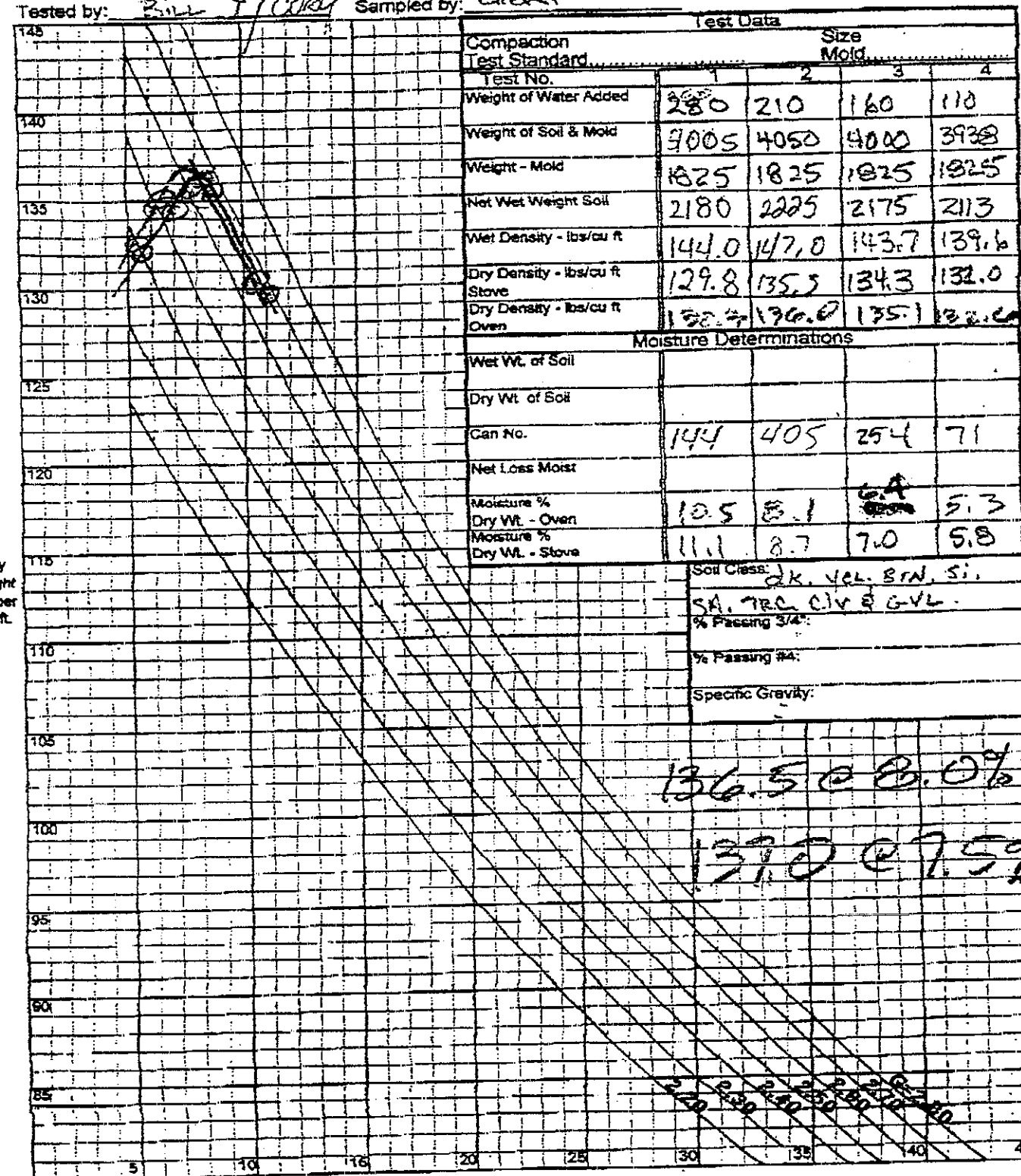
**Miscellaneous Information:
Compaction Tests-Field Data and
Modified Proctor Test Data**

Job No. 98-12804
97-404, 195
 Location MCAS, EL 7010
 Date 12-4-98

Associated Soils Engineering
 Max. Density and Moisture Curves
 ASTM D1557 or D698

Site No. _____
 Elevation 512.797
 Sta FILL SAND

Tested by: Bill T / Cory Sampled by: client



PROJECT NAME BUILDING 765, MLAS EL TORO PROJECT NUMBER 97-404.190

TEST NO.		765-1	765-2	765-3				
DATE		12/13/98	12/13/98	12/13/98				
ELEVATION								
DEPTH BELOW FINISHED GRADE		4'	2'	GRADE				
LOCATION		LOT 4 OWS EXCAV.	LOT 4 OWS EXCAV.	LOT 2 OWS EXCAV.				
SAND CONE METHOD ASTM D1556-82	SAND	Initial weight of sand and tare (lbs)						
		Final weight of sand and tare (lbs)						
		Gross sand used (lbs)						
		Correction for cone (lbs)						
		Net sand used (lbs)						
		Density of sand (lbs)						
	SOIL	Wet weight of soil and tare (lbs)						
		Weight tare (lbs)						
		Wet weight of soil (lbs)						
		Wet density of soil (pcf)						
NUCLEAR GAUGE ASTM D2922-81	Depth of measurement	6"	6"	6"				
	Measurment speed	Normal	Normal	Normal				
	Density count							
	Moisture count							
	Wet density (lb/ft ³)	136.2	136.7	141.8				
MOISTURE	Wet weight - cup (gms)							
	Dry weight - cup (gms)							
	Weight of cup (gms)							
	Weight of dry soil (gms)							
	Weight of water (gms)							
	Moisture content (percent)	8.5	9.0	9.0				
RESULTS	Dry density (lb/ft ³)	125.6	125.5	131.0				
	Curve number							
	Maximum dry density	136.5	136.5	136.5				
	Compaction (percent)	92	92	96				

Density standard _____

Moisture standard _____

REMARKS _____

Tested by VILTOR MANZO

Appendix C
OCHCA and RWQCB Letters



**COUNTY OF ORANGE
HEALTH CARE AGENCY**

**PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH**

DONALD R. OXLEY
DIRECTOR

HILDY MEYERS, M.D.
INTERIM HEALTH OFFICER

JACK MILLER, REHS
DEPUTY DIRECTOR

MAILING ADDRESS:
2009 EAST EDINGER AVENUE
SANTA ANA, CA 92705-4720

TELEPHONE: (714) 667-3800
FAX: (714) 972-0749

April 2, 1999

Ms. Patricia Hannon
Santa Ana Regional Water Quality Control Board
3737 Main Street, Suite 500
Riverside, CA 92501-3339

RE: Marine Corps Air Station El Toro
Tank #765A and Oil/Water Separator 765B
Santa Ana, CA 92709

Dear Ms. Hannon:

Due to the observation of discoloration and detection of elevated soil contamination concentrations and during tank removal activities at the above referenced site, this Agency is referring the case to you for assessment and remediation oversight. It is this Agency's understanding that a copy of the tank closure report documenting the removal and results of all soil sampling will be forwarded to your Agency.

If you have any questions or require any further information, please contact me at (714) 667-3713.

Sincerely,

Arghavan Rashidi-Fard
Hazardous Waste Specialist
Hazardous Materials Management Section
Environmental Health Division

cc: Maj. Jeff Matthews, MCAS El Toro
Ms. Lynn Hornecker, SWDIV



Winston H. Hickox
Secretary for
Environmental
Protection

California Regional Water Quality Control Board

Santa Ana Region

Internet Address: <http://www.swrcb.ca.gov/rwqcb8>
3737 Main Street, Suite 500, Riverside, California 92501-3348
Phone (909) 782-4130 FAX (909) 781-6288



Gray Davis
Governor

October 5, 2000

Mr. Dean Gould
BRAC Environmental Coordinator
MCAS El Toro
P O Box 51718
Irvine, CA 92619-1718

COMMENTS ON UNDERGROUND STORAGE TANK AND OIL/WATER SEPARATOR REMOVAL REPORT, UST 765A AND OWS 765B, MARINE CORPS AIR STATION, EL TORO

Dear Mr. Gould:

We have completed our review of the above-referenced document, dated January 21, 1999, which we received on June 17, 1999. We do not concur with the recommendation for closure of the former UST and OWS site, based on the following comments:

1. The soil samples taken do not satisfy closure requirements as specified in the California Code of Regulations, Title 23, Division 3, Chapter 16, Article 7, Section 2672.d.1:

"Soil samples shall be taken immediately beneath the removed portions of the tank, a minimum of two feet into native material at each end of the tank in accordance with section 2649. A separate sample shall be taken for each 20 lineal-feet of trench for piping."

According to the removal report, only one sample was taken from the tank bottom, and no samples were taken from the trench for piping. The recommendation for closure in this summary report is based on the sampling that was done during the tank removal activities. Based on this limited sampling, the soil characterization in the former tank area is insufficient to warrant closure.

2. An on-site soil stockpile was used to backfill the excavation. The sample taken from the soil stockpile (prior to backfilling of the excavation) contained TRPH at a concentration of 5,680 mg/kg, which is well above the target clean-up level. Because you used this contaminated soil to backfill the excavation, samples should be taken from the former excavation site to characterize the extent of soil contamination.

For any questions on this review or related matters, please call me at (909) 782-4494.

Sincerely,

John Broderick
SLIC/DoD/AGT Section

cc: Ms. Triss Chesney, Department of Toxic Substances Control, OMF
Mr. Gregory F. Hurley, El Toro RAB Co-Chair
Ms. Lynn Hornecker, Naval Facility Engineering Command, SWDIV
Mr. Glenn Kistner, U.S. EPA, Region IX

California Environmental Protection Agency



received
10/13/00

Appendix D

IT Letter Work Plan

**IT Corporation**

3347 Michelson Drive, Suite 200
Irvine, CA 92612-1692
Tel. 949.261.6441
Fax. 949.474.8309

A Member of The IT Group

October 10, 2002

Naval Facilities Engineering Command, Southwest Division
1220 Pacific Highway
San Diego, California 92132-5187

Attn: Ms. Lynn Marie Hornecker

**Subject: Letter Work Plan for Site Assessment at USI 765A and OWS 765B Site
Contract N68711-00-F-1459, GSA Contract No. GS-10F-0048J
IT Project No. 812380, Document Control No. GS812380-08
MCAS El Toro, California**

Dear Ms. Hornecker:

This Letter Work Plan (WP) was prepared by IT Corporation (IT) to describe the assessment activities at a former underground storage tank and oil/water separator site within the Marine Corp Air Station (MCAS) El Toro, California. The work is being performed under Southwest Division Naval Facilities Engineering Command (SWDIV) Contract No. N68711-00-F-0115, and GSA Contract No. GS-10F-0048J, as modified in September 2001. The IT project number is 812380. This Work Plan constitutes the pre-construction submittal for this project. Due to the similarity of the site work, this work will be performed in accordance with the previously approved Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP) (Appendix A Attachments). Five copies of the Work Plan are being submitted as required in the Navy's Statement of Work.

Site Location

MCAS El Toro (the "Station") is located in southern California approximately 45 miles southeast of Los Angeles in Orange County. The Station is approximately 1 mile north of the intersection of Interstates 5 and 405. The Station covers approximately 4,700 acres, and is shown in Figure 1.

Objective

The objective of this project is to perform site assessment activities at former underground storage tank (UST) 765A and former oil/water separator (OWS) 765B, in response to comments received from the Regional Water Quality Control Board (RWQCB) dated October 5, 2000 (included in Appendix B).

The following general activities will be conducted by IT in order to achieve this objective:

- Drilling of three soil borings to approximately 50 feet below ground surface (bgs) at the site of former UST 765A and OWS 765B
- Drilling of three soil borings to approximately 10 feet bgs along the existing and former wash pad drain lines to the OWS, the drain line from Building 765 to the wash pad sump, the side of the wash pad adjacent to the valve box.
- Collection of soil samples from each borings at specific depths.

Site Background

Former UST 765A and OWS 765B were located on the northwestern side of the Station near the intersection of West Marine Way and 7th Street. The Site is adjacent to the location of former Tank Farm 2 and Building 242, the Command Museum. Former UST 765A was a 500-gallon steel UST and OWS 765B was a 100-gallon capacity, steel OWS used to separate waste oil and water. OWS 765A collected and separated the oil-containing wash water from the bermed containment area adjacent to Building 765. Most recently the Site was used for cleaning equipment and parts associated with the Command Museum. The locations of UST 765A, OWS 765B, and Building 765 are shown in Figure 2. Location Map.

Previous Investigation

In December 1998, GEOFON, Inc. removed UST 765A and OWS 765B and approximately 40 feet of associated piping under the direction of Orange County Health Care Agency (OCHCA) (Appendix C contains a copy of the GEOFON report.) One soil sample was collected from the bottom of the excavation (9 feet bgs – #765A) and a second sample collected from the soil stockpile (#765B). Both samples were analyzed for total recoverable petroleum hydrocarbon (TRPH) using EPA Method 418.1, which identified concentrations of TRPH at 969 and 5,680 mg/kg for samples #765A and #765B, respectively.

A subsequent analysis for volatile organic compounds (VOCs) using EPA Method 8260 indicated the presence of a number of volatile organic compounds as shown in Table 1. GEOFON issued an Underground Storage Tank and Oil/Water Separator Removal Report for UST 765A and OWS 765B in January 1999 (Appendix C).

In April 1999, the OCHCA referred the Site to the Santa Ana Regional Water Quality Control Board for oversight due to the presence of the VOCs and TRPH.

In October 2000, the RWQCB issued comments on the GEOFON report and requested that additional sampling be conducted within the excavated area, and along the pipelines to better determine the extent of the contamination. Copies of the correspondence from the OCHCA and RWQCB are included in Appendix B.

Table 1

Chemicals Identified at Former UST 765A and OWS 765B Site (GEOFON, 1999)

Analyte	Detected in Soil
Sec-Butylbenzene	22.8 µg/kg
1,2-Dichlorobenzene	119 µg/kg
1,4-Dichlorobenzene	28.7 µg/kg
Ethylbenzene	24.8 µg/kg
Isopropylbenzene	12.5 µg/kg
Isopropyltoluene	34.6 µg/kg
Naphthalene	171 µg/kg
n-Propylbenzene	36.2 µg/kg
Tetrachloroethene	96.2 µg/kg
1,2,4-Trimethylbenzene	1,580 µg/kg
1,3,5-Trimethylbenzene	4,060 µg/kg
Total Xylenes	349 µg/kg
TRPH	5,680 mg/kg

Site Assessment Activities at Former UST 765A and OWS 765B Site

Based on the review of the previous background information from GEOFON, and based on the RWQCB comments, IT will drill three 50-foot deep soil borings in or adjacent to the former UST 765A/OWS 765B Site to assess the vertical and lateral extent of contamination. In addition, three shallow (10-foot) borings (approximately one for every 20 feet of pipe length) will be drilled in the vicinity of the existing and former drain lines and piping associated with the former OWS.

The three deep soil borings will be drilled in the vicinity of the former UST and OWS. One soil boring will be drilled approximately in the middle of the excavation. The second and third deep borings will be drilled slightly to the east and west of the former UST/OWS location and excavation. The shallow borings will be drilled along the drain line from Building 765 to the wash pad sump, and the other two lines will be drilled along the discharge lines from the sump to the OWS and the sump to the storm drain, as shown in Figure 3, Site Plan. The locations may be modified in the field depending on the results of a geophysical survey of the site.

Soil samples will be collected from the deep soil borings at 10, 20, 30, 40, and 50 feet bgs or at key lithologic units, as determined in the field by visual inspection or photoionization detector (PID) readings, using a split-spoon sampler. Soil samples will be collected at 5 and 10 feet bgs from the shallow borings. A soil sample will also be collected at approximately 5 feet bgs from any boring which lies within the former excavation area to address RWQCB concerns about the backfill soil.

Sampling activities will be conducted in accordance with the approved FSP and QAPP previously issued under this GSA Contract. The compounds identified in Table 1 at concentrations above the laboratory reporting limits are essentially the same as the compounds listed in Table 2-1 of the FSP. For reference, copies of the approved FSP and QAPP are included as attachments in Appendix A.

At a minimum, soil samples will be analyzed for the following:

- Purgeable and extractable total petroleum hydrocarbons (TPH) (commonly known as TPH as gasoline/diesel) by California Leaking Underground Fuel Tank (CA LUFT) Method 8015 modified.
- VOCs (including methyl tert-butyl ether [MTBE], tertiary butyl alcohol [TBA], tertiary amyl methyl ether [TAME], and ethyl tert-butyl ether [ETBE] from here on, referred to as expanded compound list) by EPA Method 8260B
- Metals by EPA Method 6010B/7000 Series (for waste disposal requirements).

Soil sampling procedures are described in FSP Section 5.1.1.

Waste Management

Fieldwork at the Site will generate soil cuttings and decon water, which will be containerized in U.S. Department of Transportation (DOT) approved 55-gallon steel drums. Appropriate sampling will be conducted as per the FSP and depending on the specific requirements of the disposal facility or disposal method. Some concrete and soil, generated during concrete coring activities may also be sent to the off-site facility.

Reporting

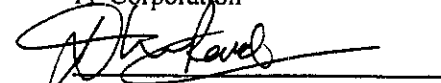
After completion of assessment activities at the site of former UST 765A and OWS 765B Site, IT will prepare a Site Assessment Report for submittal to the RWQCB. This document will be first submitted to

the Navy as Draft for over-the-shoulder review and then issued as Final after incorporating Navy comments. The final documents will be signed by a Registered Geologist as appropriate.

Following the receipt of and resolution/response to any comments on this Work Plan by the Navy, field activities will be coordinated with Scott Kehe at the El Toro, Caretaker Site Office.

Should you have any questions, please feel free to contact me at (949) 660-7576.

Sincerely,
IT Corporation


Dhananjay Rawal
Project Manager

cc: Gracy Tinker, SWDIV, (1C/1E) w/o attachments
IT Cincinnati PMO File (1C/1E)
Project File, Correspondence
IRV Doc Prod File

Work Plan Attachments: Figures 1, 2, and 3

Appendices:

- Appendix A: Sampling and Analysis Plan, dated September 25, 2002 Includes Field Sampling Plan, and Quality Assurance Project Plan, IT Corporation, October 13, 2000
- Appendix B: Correspondence from OCHCA and RWQCB concerning the Site
- Appendix C: Underground Storage Tank and Oil/Water Separator Removal Report, GEOFON, January 21, 1999

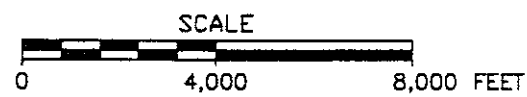
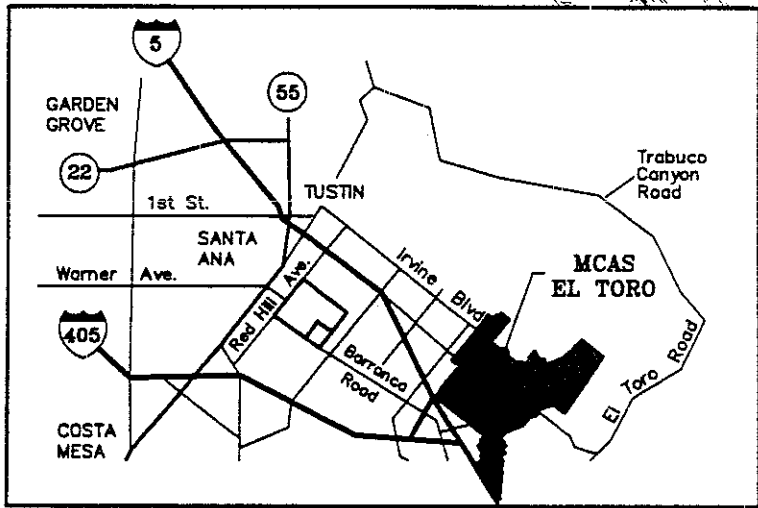
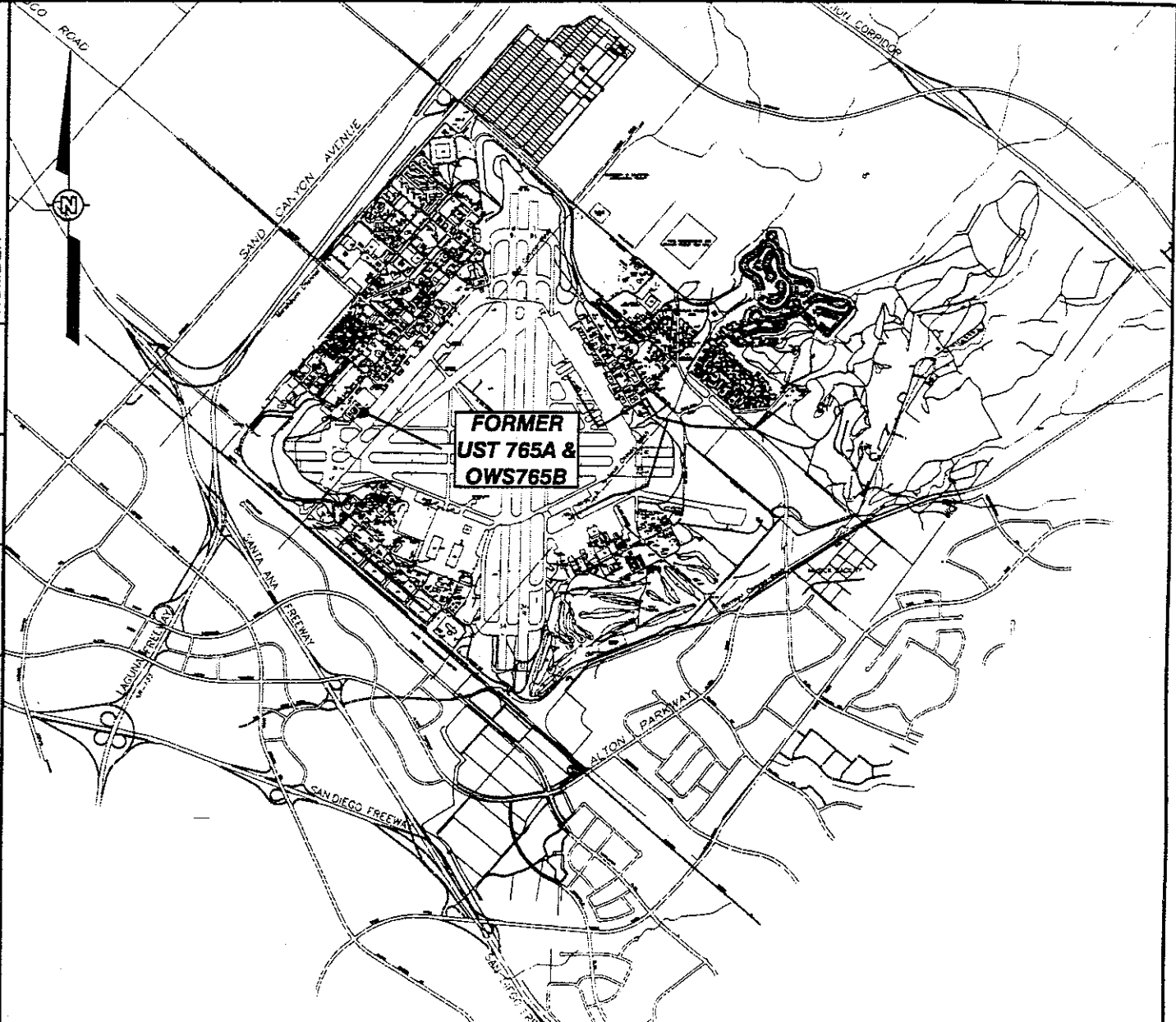
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APPROVED BY
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 ITT CORPORATION	 GSA CONTRACT NO. GS-10F-0048J SWDIV N68711-00-F0115
	FIGURE 1 FACILITY LOCATION MAP FORMER UST 765A AND OWS 765B MARINE CORPS AIR STATION EL TORO, CALIFORNIA

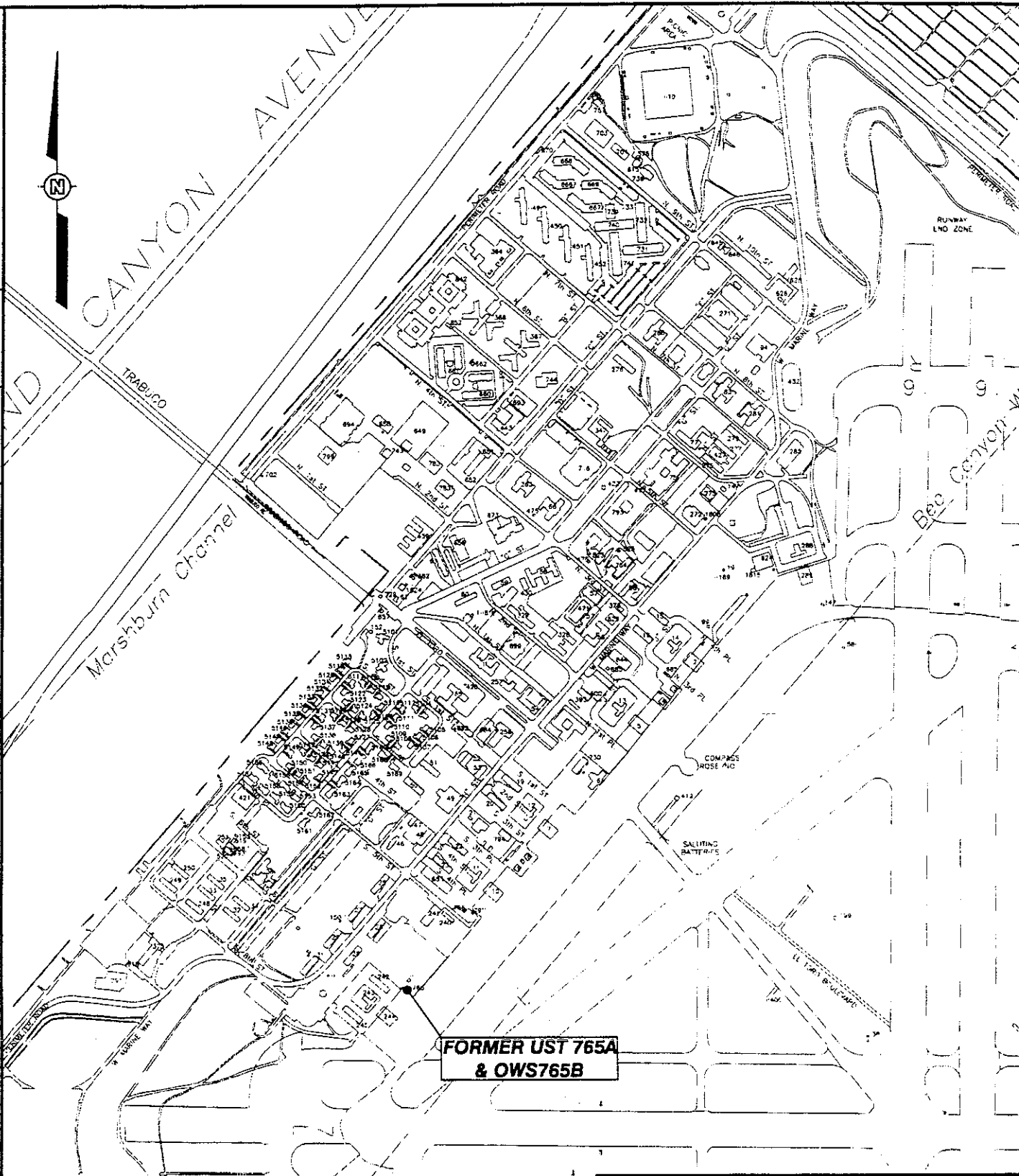
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NUMBER 812380-A5

APPROVED BY
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CHECKED BY
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DRAWN BY
12/17/01
RP

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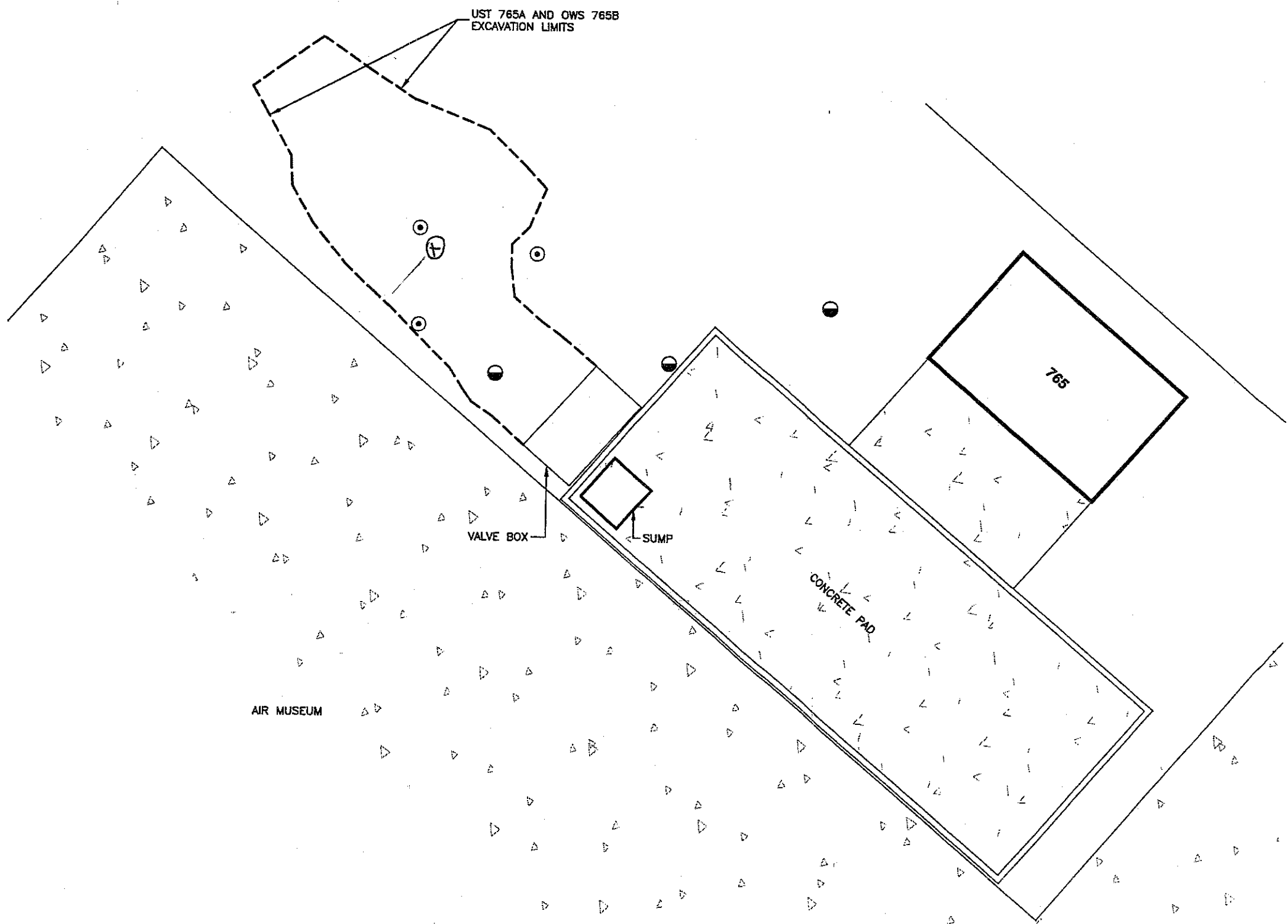


GSA CONTRACT NO. GS-10F-0048J
SWD/V N68711-00-F0115

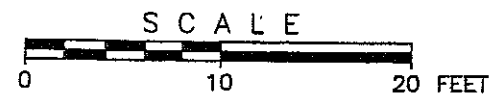
**FIGURE 2
VICINITY MAP
FORMER UST 765A AND OWS 765B**

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE
0 1,000 2,000 FEET



- LEGEND:
- PROPOSED DEEP BORINGS
 - PROPOSED SHALLOW BORINGS FOR FORMER PIPING TRENCH



 IT CORPORATION	 GSA CONTRACT NO. GS-10F-0048J SWDIV N68711-00-F0115
	FIGURE 3 SITE PLAN FORMER UST 765A AND OWS 765B MARINE CORPS AIR STATION EL TORO, CALIFORNIA



Winston H. Hickox
Secretary for
Environmental
Protection

California Regional Water Quality Control Board

Santa Ana Region

Internet Address: <http://www.swrcb.ca.gov/rwqcb8>
3737 Main Street, Suite 500, Riverside, California 92501-3348
Phone (951) 782-4130 FAX (909) 781-6288



Gray Davis
Governor

October 5, 2000

Mr. Dean Gould
BRAC Environmental Coordinator
MCAS El Toro
P O Box 51718
Irvine, CA 92619-1718

COMMENTS ON UNDERGROUND STORAGE TANK AND OIL/WATER SEPARATOR REMOVAL REPORT, UST 765A AND OWS 765B, MARINE CORPS AIR STATION, EL TORO

Dear Mr. Gould:

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2. An on-site soil stockpile was used to backfill the excavation. The sample taken from the soil stockpile (prior to backfilling of the excavation) contained TPH at a concentration of 5,680 mg/kg, which is well above the target clean-up level. Because you used this contaminated soil to backfill the excavation, samples should be taken from the former excavation site to characterize the extent of soil contamination.

For any questions on this review or related matters, please call me at (909) 782-4494.

Sincerely,


John Broderick
SEIC/DoD/AGT Section

cc: Ms. Triss Chesney, Department of Toxic Substances Control, OMF
Mr. Gregory F. Hurley, El Toro RAB Co-Chair
Ms. Lynn Hornecker, Naval Facility Engineering Command, SWDIV
Mr. Glenn Kistner, U.S. EPA, Region IX

California Environmental Protection Agency

received
10/13/00



**COUNTY OF ORANGE
HEALTH CARE AGENCY**

**PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH**

DONALD R. OXLEY
DIRECTOR

HILDY MEYERS, M.D.
INTERIM HEALTH OFFICER

JACK MILLER, REHS
DEPUTY DIRECTOR

MAILING ADDRESS:
2009 EAST EDINGER AVENUE
SANTA ANA, CA 92705-4720

TELEPHONE: (714) 667-3600
FAX: (714) 972-0749

April 2, 1999

Ms. Patricia Hannon
Santa Ana Regional Water Quality Control Board
3737 Main Street, Suite 500
Riverside, CA 92501-3339

RE: Marine Corps Air Station El Toro
Tank #765A and Oil/Water Separator 765B
Santa Ana, CA 92709

Dear Ms. Hannon:

Due to the observation of discoloration and detection of elevated soil contamination concentrations and during tank removal activities at the above referenced site, this Agency is referring the case to you for assessment and remediation oversight. It is this Agency's understanding that a copy of the tank closure report documenting the removal and results of all soil sampling will be forwarded to your Agency.

If you have any questions or require any further information, please contact me at (714) 667-3713

Sincerely,

A handwritten signature in cursive script, reading "Arghavan Rashidi-Fard".

Arghavan Rashidi-Fard
Hazardous Waste Specialist
Hazardous Materials Management Section
Environmental Health Division

cc: Maj. Jeff Matthews, MCAS El Toro
Ms. Lynn Homecker, SWDIV

Appendix E

RFA Background Information


**MARINE CORPS AIR STATION EL TORO
EL TORO, CALIFORNIA
INSTALLATION RESTORATION PROGRAM
FINAL RESOURCE CONSERVATION
AND RECOVERY ACT (RCRA)
FACILITY ASSESSMENT REPORT**


PREPARED BY:
Southwest Division, Naval Facilities
Engineering Command
1220 Pacific Highway
San Diego, California 92132-5190

THROUGH:
CONTRACT #N68711-89-D-9296
CTO #193
DOCUMENT CONTROL NO:
CLE-C01-01F193-S2-0001

WITH:
Jacobs Engineering Group, Inc.
3655 Nobel Drive, Suite 200
San Diego, California 92122

In association with:
International Technology Corporation
CH2M HILL


Mike Arends, P.E.
CLEAN Project Manager
CH2M HILL, Inc.
7/16/93
Date


Raoul Portillo
CLEAN Technical Reviewer
Jacobs Engineering Group Inc.
15 July 1993
Date

MARINE CORPS AIR STATION
EL TORO
EL TORO, CALIFORNIA
INSTALLATION RESTORATION PROGRAM
RCRA FACILITY ASSESSMENT
DRAFT PRELIMINARY REVIEW/
VISUAL SITE INSPECTION REPORT

VOLUME I

3 JULY 1991

PREPARED BY:
Southwest Division, Naval Facilities
Engineering Command
1220 Pacific Highway
San Diego, California 92132-5190

THROUGH:
CONTRACT #N68711-89-D-9296
CTO #0099
DOCUMENT CONTROL NO.
CLE-C01-01F099-B2-0004

WITH:
Jacobs Engineering Group, Inc.
3655 Nobel Drive, Suite 200
San Diego, California 92122

In association with:
International Technology Corporation
CH2M HILL
Grigsby/Graves

M. W. Acosta
Project Manager

Jeffrey L. Hendrix
Technical Reviewer

TABLE 4-1
COMPREHENSIVE LIST OF SWMUs AND AREAS OF CONCERN
IDENTIFIED DURING THE PRELIMINARY REVIEW/VISUAL SITE INSPECTION
MCAS EL TORO RFA

SWMU	SWMU TYPE	SOURCE (1)	LOCATION/BUILDING	COMMENTS	DATE	SIZE	MATERIAL	CONTENTS
211	Oil/Water Separator	f	763	Active	1982	100 gal	Steel	
212	Underground Storage Tank	f	763	Active	1982	165 gal	Steel	Waste Oil
213	Vehicle Wash Rack	a	764					
214	Underground Storage Tank	f	764	Active	1982	165 gal	Steel	Waste Oil
215	Oil/Water Separator	f	764	Active	1982	100 gal	Steel	
216	Vehicle Wash Rack	a	765					
217	Underground Storage Tank	f	765	Active	1982	165 gal	Steel	Waste Oil
218	Oil/Water Separator	f	765	Active	1982	100 gal	Steel	
219	Vehicle Wash Rack	a	766					
220	Oil/Water Separator	f	766	Active	1982	100 gal	Steel	Waste Oil
221	Underground Storage Tank	f	766	Active	1982	165 gal	Steel	
222	Underground Storage Tank	f	768	Former permitted Haz Waste collection facility				
223	Hazardous Waste Storage Area	d	769	Former permitted Haz Waste collection facility				
224	Hazardous Waste Storage Area	d	770	Former permitted Haz Waste collection facility				
225	Hazardous Waste Storage Area	d	771	Former permitted Haz Waste collection facility				
226	Hazardous Waste Storage Area	d	772	Former permitted Haz Waste collection facility				
227	Hazardous Waste Storage Area	d	778	Former permitted Haz Waste collection facility				
228	Hazardous Waste Storage Area	d	779	Former permitted Haz Waste collection facility				
229	Underground Storage Tank	f	779	Active	1986	1,000 gal	Fiberglass-Coated Steel	Fuel Stop
230	Hazardous Waste Storage Area	Active	800					
231	Underground Storage Tank	f	800	Active	1984	1,000 gal	Fiberglass	Waste Oil
232	Underground Storage Tank	f	800	Active	1984	1,000 gal	Fiberglass	Waste Oil
233	Underground Storage Tank	Active	800	Active	1984	1,500 gal	Concrete	
234	Oil/Water Separator	f	817					
235	Hazardous Waste Storage Area	Active	856					
236	Drum Storage Area	c	1519	Possible Duplicate of SWMU/AOC 27		300 sq ft		
237	Drum Storage Area	b	1663	RtFS Site				
238	Drum Storage Area (2)	b	1700					
239	Drum Storage Area (2)	b	1727					
240	Drum Storage Area (2)	a	1798					
	Drum Storage Area (2)	k	155					

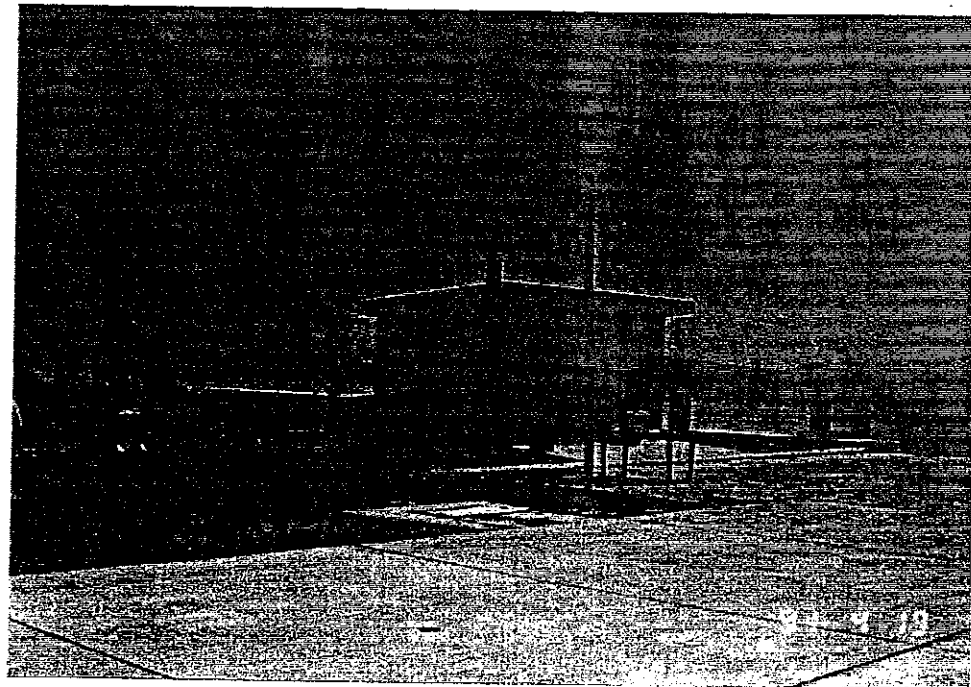
**Evaluation Form
SWMU/Area of Concern
Number 217**

Name: Underground Storage Tank 765-A

Location: Bldg. 765

Size: 185 gallons

Date of Site Visit: 19 April 91



Period of Operation

Installed in 1982
Currently inactive

**Evaluation Form
SWMU/Area of Concern
Number 217**

Unit Characteristics

Tank 765-A is a 185-gallon, steel wall, underground storage tank. The tank was installed in 1982 along with oil/water separator 765-B. Tank 765-A is a waste oil holding tank for storing waste oil residue received from oil/water separator 765-B. Because the tank is located under ground, the physical condition of the tank could not be visually observed. See Evaluation Form SWMU/Area of Concern Number 218 (oil/water separator 765-B) for a description of the locational characteristics of the tank.

Waste Characteristics

Waste oil

Possible Migration Pathways

Subsurface soil

Evidence of Release

None observed

Exposure Potential

On-Station personnel

Recommendations

This UST has not been tank tested. Although no evidence of a release was indicated from the records review or the VSI, it is difficult to assess the potential for release from this underground SWMU/AOC. For this reason, a sampling visit is suggested for this UST.

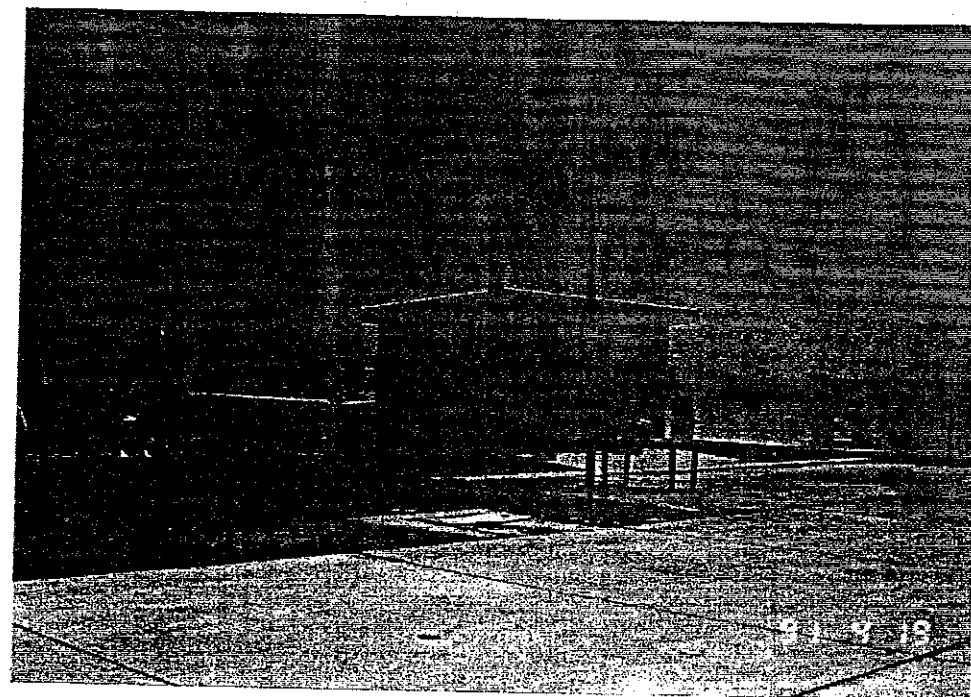
**Evaluation Form
SWMU/Area of Concern
Number 218**

Name: Oil/Water Separator 765-B

Location: Adjacent to Vehicle Washrack associated with Bldg. 765

Size: 100 gallons

Date of Site Visit: 19 April 91



Period of Operation

Installed in 1982
Currently inactive

**Evaluation Form
SWMU/Area of Concern
Number 218**

Unit Characteristics

Oil/water separator 765-B is located adjacent to the northwest corner of the washrack at Building 765. The oil/water separator was installed in 1982. It consists of a 100-gallon, steel wall tank. The location of the oil/water separator is identified by a three piece galvanized steel cover. The entire cover measures about 5 ft x 10 ft. The cover protects the vents and discharge pipes associated with the oil/water separator. The steel cover is bordered by 1 ft of concrete surface which is bordered by asphalt. Because the oil/water separator is located underground, the physical condition of the separator could not be observed.

Waste Characteristics

Oily water

Possible Migration Pathways

Subsurface soil

Evidence of Release

None observed

Exposure Potential

On-station personnel

Recommendations

This UST has not been tank tested. Although no evidence of a release was indicated from the records review or the VSI, it is difficult to assess the potential for release from this underground SWMU/AOC. For this reason, a sampling visit is suggested for this UST.

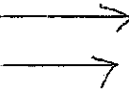


TABLE 4-2 SWMUs AND AREAS OF CONCERN RECOMMENDED FOR SAMPLING VISIT MCAS EL TORO RFA		
SWMU/ AOC NO.	TYPE	LOCATION/BUILDING
203	Oil/Water Separator	760
204	Vehicle Wash Rack	761
205	Oil/Water Separator	761
206	Underground Storage Tank	761
208	Oil/Water Separator	762
209	Underground Storage Tank	762
211	Oil/Water Separator	763
212	Underground Storage Tank	763
213	Vehicle Wash Rack	764
214	Underground Storage Tank	764
215	Oil/Water Separator	764
217 (1)	Underground Storage Tank	765
218 (1)	Oil/Water Separator	765
220	Oil/Water Separator	766
221	Underground Storage Tank	766
222	Hazardous Waste Storage Area	769
223	Hazardous Waste Storage Area	770
224	Hazardous Waste Storage Area	771
225	Hazardous Waste Storage Area	772
226	Hazardous Waste Storage Area	778
227	Hazardous Waste Storage Area	779
229	Hazardous Waste Storage Area	800
231	Underground Storage Tank	800
232	Underground Storage Tank	800
233	Oil/Water Separator	817
234	Hazardous Waste Storage Area	856
241	Drum Storage Area	155
242	Hazardous Waste Storage Area	371
243	Washrack	96
244	PCB Spill Area	457
248	Oil/Water Separator	463

TABLE 4-2 SWMUs AND AREAS OF CONCERN RECOMMENDED FOR SAMPLING VISIT MCAS EL TORO RFA		
SWMU/ AOC NO.	TYPE	LOCATION/BUILDING
296	Oil/Water Separator	357
298	Underground Storage Tank	392
300	Spill Area, East of SWMU/AOC 194	746
301	Mark Arrest System (with UST)	East side of Runway 34R
302	Mark Arrest System (with UST)	West side of Runway 34R
303	Underground Storage Tank	359
NOTES: → (1) SWMUs/AOCs 67, 72, 217, and 218 were determined to be located within the boundaries of the RI/FS sites at the Station and were eliminated from sampling visits.		

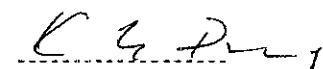
Appendix F
Laboratory Analytical Reports and Data
Validation Report

Sample ID	Control #	Col Date	Matrix	Analysis
-----	-----	-----	-----	-----
VOLATILE ORGANICS BY GC/MS				

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely yours,



Kam Y. Pang, Ph.D.
Laboratory Director

- 1001



1835 W. 205th Street Torrance, CA 90501 Tel: (310) 618-8889 Fax: (310) 618-0818

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

=====

Client	: SHAW E&I	Date Collected:	08/01/03
Project	: MCAS EL TORO, 812380	Date Received:	08/01/03
Batch No.	: 03H010	Date Extracted:	08/05/03 17:00
Sample ID:	812380-0090	Date Analyzed:	08/07/03 21:36
Lab Samp ID:	H010-02W	Dilution Factor:	1
Lab File ID:	TH05067A	Matrix	: SOIL
Ext Btch ID:	DSH008S	% Moisture	: 16.0
Calib. Ref.:	TH05060A	Instrument ID	: GCT050

=====

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
-----	-----	-----	-----
DIESEL	ND	12	4.8

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
-----	-----	-----
BROMOBENZENE	91	45-165
HEXACOSANE	114	27-176

RL : Reporting Limit
SURRE1 : Bromobenzene
SURRE2 : Hexacosane

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

=====
Client : SHAW E&I Date Collected: 08/01/03
Project : MCAS EL TORO, 812380 Date Received: 08/01/03
Batch No.: 03H010 Date Extracted: 08/05/03 17:00
Sample ID: 812380-0092 Date Analyzed: 08/07/03 22:59
Lab Samp ID: H010-04 Dilution Factor: 1
Lab File ID: TH05069A Matrix : SOIL
Ext Btch ID: DSH008S % Moisture : 17.2
Calib. Ref.: TH05060A Instrument ID : GCT050
=====

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
DIESEL	ND	12	4.8
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT	
BROMOBENZENE	108	45-165	
HEXACOSANE	127	27-176	

RL : Reporting Limit
SURRE1 : Bromobenzene
SURRE2 : Hexacosane

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

=====

Client	: SHAW E&I	Date Collected:	08/01/03
Project	: MCAS EL TORO, 812380	Date Received:	08/01/03
Batch No.	: 03H010	Date Extracted:	08/02/03 13:30
Sample ID:	812380-0096	Date Analyzed:	08/08/03 03:09
Lab Samp ID:	H010-08	Dilution Factor:	.95
Lab File ID:	TH05075A	Matrix	: WATER
Ext Btch ID:	DSH004W	% Moisture	: NA
Calib. Ref.:	TH05072A	Instrument ID	: GCT050

=====

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
-----	-----	-----	-----
DIESEL	ND	.095	.011

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
-----	-----	-----
BROMOBENZENE	89	45-165
HEXACOSANE	125	36-176

RL : Reporting Limit
SURRE1 : Bromobenzene
SURRE2 : Hexacosane

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: SHAW E&I
PROJECT: MCAS EL TORO, 812380
ATCH NO.: 03H010
METHOD: METHOD M8015

MATRIX: WATER % MOISTURE: NA
DILUTION FACTOR: 1 1 1
SAMPLE ID: MBLK1W
LAB SAMP ID: DSH004WB DSH004WL DSH004WC
LAB FILE ID: TH05063A TH05064A TH05065A
DATE EXTRACTED: 08/02/0313:30 08/02/0313:30 08/02/0313:30 DATE COLLECTED: NA
DATE ANALYZED: 08/07/0318:48 08/07/0319:30 08/07/0320:12 DATE RECEIVED: 08/02/03
PREP. BATCH: DSH004W DSH004W DSH004W
CALIB. REF: TH05060A TH05060A TH05060A

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Diesel	ND	5	5.2	104	5	5.36	107	3	60-140	30

SURROGATE PARAMETER	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	QC LIMIT (%)
Bromobenzene	1	.977	98	1	.999	100	50-150
Hexacosane	.25	.327	131	.25	.336	134	40-160

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: SHAW E&I
PROJECT: MCAS EL TORO, 812380
BATCH NO.: 03H010
METHOD: METHOD M8015

MATRIX: SOIL
DILUTION FACTOR: 1 1 1 % MOISTURE: NA
SAMPLE ID: MBLK1S
LAB SAMP ID: DSH008SQ DSH008SX DSH008SY
LAB FILE ID: TH05051A TH05052A TH05053A
DATE EXTRACTED: 08/05/0317:00 08/05/0317:00 08/05/0317:00 DATE COLLECTED: NA
DATE ANALYZED: 08/07/0310:25 08/07/0311:07 08/07/0311:49 DATE RECEIVED: 08/05/03
PREP. BATCH: DSH008S DSH008S DSH008S
CALIB. REF: TH05049A TH05049A TH05049A

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Diesel	ND	500	457	91	500	523	105	14	50-140	50

SURROGATE PARAMETER	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	QC LIMIT (%)
Bromobenzene	100	103	103	100	109	109	50-150
Hexacosane	25	29.5	118	25	31.5	126	30-160

METHOD 5030B/M8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client : SHAW E&I
Project : MCAS EL TORO, 812380
Batch No. : 03H010
Matrix : WATER
Instrument ID : GCT039

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	SURR (%)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	VA39H06B	ND	93	1	NA	.1	.02	08/04/0312:19	08/04/0312:19	EH04004A	EH04003A	VA39H06	NA	08/04/03
LCS1W	VA39H06L	.511	101	1	NA	.1	.02	08/04/0312:54	08/04/0312:54	EH04005A	EH04003A	VA39H06	NA	08/04/03
LCD1W	VA39H06C	.503	99	1	NA	.1	.02	08/04/0313:28	08/04/0313:28	EH04006A	EH04003A	VA39H06	NA	08/04/03
812380-0096	H010-08	ND	99	1	NA	.1	.02	08/04/0320:18	08/04/0320:18	EH04018A	EH04012A	VA39H06	08/01/03	08/01/03

RL : Reporting Limit

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: SHAW E&I
PROJECT: MCAS EL TORO, 812380
JATCH NO.: 03H010
METHOD: METHOD 5030B/M8015

MATRIX: WATER
DILUTION FACTOR: 1 1 1 % MOISTURE: NA
SAMPLE ID: MBLK1W
LAB SAMP ID: VA39H06B VA39H06L VA39H06C
LAB FILE ID: EH04004A EH04005A EH04006A
DATE EXTRACTED: 08/04/0312:19 08/04/0312:54 08/04/0313:28 DATE COLLECTED: NA
DATE ANALYZED: 08/04/0312:19 08/04/0312:54 08/04/0313:28 DATE RECEIVED: 08/04/03
PREP. BATCH: VA39H06 VA39H06 VA39H06
CALIB. REF: EH04003A EH04003A EH04003A

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Gasoline	ND	.55	.511	93	.55	.503	91	2	60-140	30

SURROGATE PARAMETER	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	QC LIMIT (%)
Bromofluorobenzene	.04	.0402	101	.04	.0394	99	70-140

Client : SHAW E&I Date Collected: 08/01/03
Project : MCAS EL TORO, 812380 Date Received: 08/01/03
Batch No. : 03H010 Date Extracted: 08/08/03 03:12
Sample ID: 812380-0090 Date Analyzed: 08/08/03 03:12
Lab Samp ID: H010-02 Dilution Factor: .98
Lab File ID: RH0181 Matrix : SOIL
Ext Btch ID: V005H13 % Moisture : 16.0
Calib. Ref.: RG0274 Instrument ID : T-005

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5.8	2.3
1,1,2,2-TETRACHLOROETHANE	ND	5.8	2.3
1,1,2-TRICHLOROETHANE	ND	5.8	2.3
1,1-DICHLOROETHANE	ND	5.8	2.3
1,1-DICHLOROETHENE	ND	5.8	2.3
1,2,3-TRICHLOROBENZENE	ND	5.8	2.3
1,2,3-TRICHLOROPROPANE	ND	5.8	2.3
1,2,4-TRICHLOROBENZENE	ND	5.8	2.3
1,2,4-TRIMETHYLBENZENE	ND	5.8	2.3
1,2-DICHLOROBENZENE	ND	5.8	2.3
1,2-DICHLOROETHANE	ND	5.8	2.3
1,2-DICHLOROPROPANE	ND	5.8	2.3
1,3,5-TRIMETHYLBENZENE	ND	5.8	2.3
1,3-DICHLOROBENZENE	ND	5.8	2.3
1,4-DICHLOROBENZENE	ND	5.8	2.3
2-CHLOROTOLUENE	ND	5.8	2.3
4-CHLOROTOLUENE	ND	5.8	2.3
BENZENE	ND	5.8	2.3
BROMOBENZENE	ND	5.8	2.3
BROMODICHLOROMETHANE	ND	5.8	2.3
BROMOFORM	ND	5.8	2.3
BROMOMETHANE	ND	5.8	3.5
CARBON TETRACHLORIDE	ND	5.8	2.3
CHLOROBENZENE	ND	5.8	2.3
CHLOROETHANE	ND	5.8	3.5
CHLOROFORM	ND	5.8	2.3
CHLOROMETHANE	ND	5.8	3.5
CIS-1,2-DICHLOROETHENE	ND	5.8	2.3
CIS-1,3-DICHLOROPROPENE	ND	5.8	2.3
DIBROMOCHLOROMETHANE	ND	5.8	2.3
ETHYLBENZENE	ND	5.8	2.3
HEXACHLOROBUTADIENE	ND	5.8	2.3
ISOPROPYL BENZENE	ND	5.8	2.3
XYLENES	ND	5.8	1.2
METHYLENE CHLORIDE	ND	5.8	2.3
N-BUTYLBENZENE	ND	5.8	2.3
N-PROPYLBENZENE	ND	5.8	2.3
NAPHTHALENE	ND	5.8	3.5
P-ISOPROPYLTOLUENE	ND	5.8	2.3
SEC-BUTYLBENZENE	ND	5.8	2.3
TERT-BUTYLBENZENE	ND	5.8	2.3
TETRACHLOROETHYLENE	ND	5.8	2.3
TOLUENE	ND	5.8	2.3
TRANS-1,2-DICHLOROETHENE	ND	5.8	2.3
TRANS-1,3-DICHLOROPROPENE	ND	5.8	2.3
TRICHLOROETHENE	ND	5.8	2.3
VINYL CHLORIDE	ND	5.8	2.3
ACETONE	15J	58	5.8
2-BUTANONE	ND	58	5.8
MTBE	ND	12	2.3
4-METHYL-2-PENTANONE	ND	58	5.8
2-HEXANONE	ND	58	5.8
VINYL ACETATE	ND	58	2.3
CARBON DISULFIDE	ND	5.8	2.3
DIPE	ND	5.8	2.3
ETBE	ND	5.8	2.3
TAME	ND	5.8	2.3
T-BUTANOL	ND	58	29
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT	
1,2-DICHLOROETHANE-D4	130	63-154	
TOLUENE-D8	118	63-143	
BROMOFLUOROBENZENE	109	63-143	

RL: Reporting Limit
Preservation Date: 08/02/03 13:20

Client : SHAW E&I
Project : MCAS EL TORO, 812380
Batch No. : 03H010
Sample ID: 812380-0092
Lab Samp ID: H010-04
Lab File ID: RHQ183
Ext Btch ID: V005H13
Calib. Ref.: RGQ274

Date Collected: 08/01/03
Date Received: 08/01/03
Date Extracted: 08/08/03 04:29
Date Analyzed: 08/08/03 04:29
Dilution Factor: .86
Matrix : SOIL
% Moisture : 17.2
Instrument ID : T-005

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5.2	2.1
1,1,2,2-TETRACHLOROETHANE	ND	5.2	2.1
1,1,2-TRICHLOROETHANE	ND	5.2	2.1
1,1-DICHLOROETHANE	ND	5.2	2.1
1,1-DICHLOROETHENE	ND	5.2	2.1
1,2,3-TRICHLOROBENZENE	ND	5.2	2.1
1,2,3-TRICHLOROPROPANE	ND	5.2	2.1
1,2,4-TRICHLOROBENZENE	ND	5.2	2.1
1,2,4-TRIMETHYLBENZENE	ND	5.2	2.1
1,2-DICHLOROBENZENE	ND	5.2	2.1
1,2-DICHLOROETHANE	ND	5.2	2.1
1,2-DICHLOROPROPANE	ND	5.2	2.1
1,3,5-TRIMETHYLBENZENE	ND	5.2	2.1
1,3-DICHLOROBENZENE	ND	5.2	2.1
1,4-DICHLOROBENZENE	ND	5.2	2.1
2-CHLOROTOLUENE	ND	5.2	2.1
4-CHLOROTOLUENE	ND	5.2	2.1
BENZENE	ND	5.2	2.1
BROMOBENZENE	ND	5.2	2.1
BROMODICHLOROMETHANE	ND	5.2	2.1
BROMOFORM	ND	5.2	2.1
BROMOMETHANE	ND	5.2	3.1
CARBON TETRACHLORIDE	ND	5.2	2.1
CHLOROBENZENE	ND	5.2	2.1
CHLOROETHANE	ND	5.2	3.1
CHLOROFORM	ND	5.2	2.1
CHLOROMETHANE	ND	5.2	3.1
CIS-1,2-DICHLOROETHENE	ND	5.2	2.1
CIS-1,3-DICHLOROPROPENE	ND	5.2	2.1
DIBROMOCHLOROMETHANE	ND	5.2	2.1
ETHYLBENZENE	ND	5.2	2.1
HEXACHLOROBUTADIENE	ND	5.2	2.1
ISOPROPYL BENZENE	ND	5.2	2.1
XYLENES	ND	5.2	1
METHYLENE CHLORIDE	ND	5.2	2.1
N-BUTYLBENZENE	ND	5.2	2.1
N-PROPYLBENZENE	ND	5.2	2.1
NAPHTHALENE	ND	5.2	3.1
P-ISOPROPYLTOLUENE	ND	5.2	2.1
SEC-BUTYLBENZENE	ND	5.2	2.1
TERT-BUTYLBENZENE	ND	5.2	2.1
TETRACHLOROETHYLENE	ND	5.2	2.1
TOLUENE	ND	5.2	2.1
TRANS-1,2-DICHLOROETHENE	ND	5.2	2.1
TRANS-1,3-DICHLOROPROPENE	ND	5.2	2.1
TRICHLOROETHENE	ND	5.2	2.1
VINYL CHLORIDE	ND	5.2	2.1
ACETONE	15J	52	5.2
2-BUTANONE	ND	52	5.2
MTBE	ND	10	2.1
4-METHYL-2-PENTANONE	ND	52	5.2
2-HEXANONE	ND	52	5.2
VINYL ACETATE	ND	52	2.1
CARBON DISULFIDE	ND	5.2	2.1
DIPE	ND	5.2	2.1
ETBE	ND	5.2	2.1
TAME	ND	5.2	2.1
T-BUTANOL	ND	52	26
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT	
1,2-DICHLOROETHANE-D4	127	63-154	
TOLUENE-D8	119	63-143	
BROMOFLUOROBENZENE	109	63-143	

RL: Reporting Limit
Preservation Date: 08/02/03 13:20

=====
Client : SHAW E&I Date Collected: 08/01/03
Project : MCAS EL TORO, 812380 Date Received: 08/01/03
Satch No.: 03H010 Date Extracted: 08/05/03 16:47
Sample ID: 812380-0096 Date Analyzed: 08/05/03 16:47
Lab Samp ID: H010-08 Dilution Factor: 1
Lab File ID: RHC137 Matrix : WATER
Ext Btch ID: V067H11 % Moisture : NA
Calib. Ref.: RHC008 Instrument ID : T-067
=====

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	1	.2
1,1,2,2-TETRACHLOROETHANE	ND	1	.3
1,1,2-TRICHLOROETHANE	ND	1	.2
1,1-DICHLOROETHANE	ND	1	.2
1,1-DICHLOROETHENE	ND	1	.2
1,2,3-TRICHLOROBENZENE	ND	1	.3
1,2,3-TRICHLOROPROPANE	ND	.5	.2
1,2,4-TRICHLOROBENZENE	ND	1	.2
1,2,4-TRIMETHYLBENZENE	ND	1	.2
1,2-DICHLOROBENZENE	ND	1	.3
1,2-DICHLOROETHANE	ND	.5	.2
1,2-DICHLOROPROPANE	ND	1	.2
1,3,5-TRIMETHYLBENZENE	ND	1	.2
1,3-DICHLOROBENZENE	ND	1	.2
1,4-DICHLOROBENZENE	ND	1	.2
2-CHLOROTOLUENE	ND	1	.2
4-CHLOROTOLUENE	ND	1	.2
BENZENE	ND	.5	.2
BROMOBENZENE	ND	1	.2
BROMODICHLOROMETHANE	ND	1	.2
BROMOFORM	ND	1	.2
BROMOMETHANE	ND	2	.2
CARBON TETRACHLORIDE	ND	.5	.2
CHLOROBENZENE	ND	1	.2
CHLOROETHANE	ND	2	.2
CHLOROFORM	ND	1	.2
CHLOROMETHANE	ND	2	.5
CIS-1,2-DICHLOROETHENE	ND	1	.2
CIS-1,3-DICHLOROPROPENE	ND	.5	.2
IBROMOCHLOROMETHANE	ND	1	.2
ETHYLBENZENE	ND	1	.2
HEXACHLOROBUTADIENE	ND	1	.2
ISOPROPYL BENZENE	ND	1	.2
XYLENES	ND	3	.5
METHYLENE CHLORIDE	ND	2	1
N-BUTYLBENZENE	ND	1	.2
N-PROPYLBENZENE	ND	1	.2
NAPHTHALENE	ND	2	.2
P-ISOPROPYLTOLUENE	ND	1	.3
SEC-BUTYLBENZENE	ND	1	.2
TERT-BUTYLBENZENE	ND	1	.2
TETRACHLOROETHYLENE	ND	1	.2
TOLUENE	ND	1	.2
TRANS-1,2-DICHLOROETHENE	ND	1	.2
TRANS-1,3-DICHLOROPROPENE	ND	.5	.2
TRICHLOROETHENE	ND	1	.2
VINYL CHLORIDE	ND	.5	.3
ACETONE	ND	10	.2
2-BUTANONE	ND	10	.5
MTBE	ND	1	.2
4-METHYL-2-PENTANONE	ND	10	1
2-HEXANONE	ND	10	1
VINYL ACETATE	ND	2	.7
CARBON DISULFIDE	ND	1	.2
DIPE	ND	2	1
ETBE	ND	2	1
TAME	ND	1	.3
T-BUTANOL	ND	20	5

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	102	63-143
TOLUENE-D8	109	63-143
BROMOFLUOROBENZENE	114	63-143

RL: Reporting Limit

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: SHAW E&I
PROJECT: MCAS EL TORO, 812380
BATCH NO.: 03H010
METHOD: SW 5035/8260B

MATRIX: SOIL
DILUTION FACTOR: 1 1 1 % MOISTURE: NA
SAMPLE ID: MBLK1S
LAB SAMP ID: V005H13B V005H13L V005H13C
LAB FILE ID: RHQ177 RHQ169 RHQ170
DATE EXTRACTED: 08/08/0300:39 08/07/0319:28 08/07/0320:07 DATE COLLECTED: NA
DATE ANALYZED: 08/08/0300:39 08/07/0319:28 08/07/0320:07 DATE RECEIVED: 08/07/03
PREP. BATCH: V005H13 V005H13 V005H13
CALIB. REF: RGQ274 RGQ274 RGQ274

ACCESSION:

PARAMETER	BLNK RSLT (ug/kg)	SPIKE AMT (ug/kg)	BS RSLT (ug/kg)	BS % REC	SPIKE AMT (ug/kg)	BSD RSLT (ug/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1-Dichloroethene	ND	20	17.6	88	20	17.1	86	3	60-130	50
Benzene	ND	20	20	100	20	18.8	94	6	70-130	50
Chlorobenzene	ND	20	18.9	95	20	18	90	5	70-130	50
Toluene	ND	20	19.3	96	20	18.4	92	5	70-130	50
Trichloroethene	ND	20	18.9	95	20	18	90	5	60-140	50

SURROGATE PARAMETER	SPIKE AMT (ug/kg)	BS RSLT (ug/kg)	BS % REC	SPIKE AMT (ug/kg)	BSD RSLT (ug/kg)	BSD % REC	QC LIMIT (%)
1,2-Dichloroethane-d4	50	59.7	119	50	60	120	70-140
Bromofluorobenzene	50	58.3	117	50	58.5	117	70-130
Toluene-d8	50	54.2	108	50	53	106	70-130

Client : SHAW E&I Date Collected: NA
Project : MCAS EL TORO, 812380 Date Received: 08/05/03
Batch No. : 03H010 Date Extracted: 08/05/03 15:00
Sample ID: MBLK1W Date Analyzed: 08/05/03 15:00
Lab Samp ID: V067H11B Dilution Factor: 1
Lab File ID: RHC134 Matrix : WATER
Ext Btch ID: V067H11 % Moisture : NA
Calib. Ref.: RHC008 Instrument ID : T-067

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	1	.2
1,1,2,2-TETRACHLOROETHANE	ND	1	.3
1,1,2-TRICHLOROETHANE	ND	1	.2
1,1-DICHLOROETHANE	ND	1	.2
1,1-DICHLOROETHENE	ND	1	.2
1,2,3-TRICHLOROBENZENE	ND	1	.2
1,2,3-TRICHLOROPROPANE	ND	.5	.2
1,2,4-TRICHLOROBENZENE	ND	1	.2
1,2,4-TRIMETHYLBENZENE	ND	1	.2
1,2-DICHLOROBENZENE	ND	1	.2
1,2-DICHLOROETHANE	ND	.5	.2
1,2-DICHLOROPROPANE	ND	1	.2
1,3,5-TRIMETHYLBENZENE	ND	1	.2
1,3-DICHLOROBENZENE	ND	1	.2
1,4-DICHLOROBENZENE	ND	1	.2
2-CHLOROTOLUENE	ND	1	.2
4-CHLOROTOLUENE	ND	1	.2
BENZENE	ND	.5	.2
BROMOBENZENE	ND	1	.2
BROMODICHLOROMETHANE	ND	1	.2
BROMOFORM	ND	1	.2
BROMOMETHANE	ND	2	.2
CARBON TETRACHLORIDE	ND	.5	.2
CHLOROBENZENE	ND	1	.2
CHLOROETHANE	ND	2	.2
CHLOROFORM	ND	1	.2
CHLOROMETHANE	ND	2	.2
CIS-1,2-DICHLOROETHENE	ND	1	.2
CIS-1,3-DICHLOROPROPENE	ND	.5	.2
IBROMOCHLOROMETHANE	ND	1	.2
ETHYLBENZENE	ND	1	.2
HEXACHLOROBUTADIENE	ND	1	.2
ISOPROPYL BENZENE	ND	1	.2
XYLENES	ND	3	.5
METHYLENE CHLORIDE	ND	2	.1
N-BUTYLBENZENE	ND	1	.2
N-PROPYLBENZENE	ND	1	.2
NAPHTHALENE	ND	2	.3
P-ISOPROPYLTOLUENE	ND	1	.2
SEC-BUTYLBENZENE	ND	1	.2
TERT-BUTYLBENZENE	ND	1	.2
TETRACHLOROETHYLENE	ND	1	.2
TOLUENE	ND	1	.2
TRANS-1,2-DICHLOROETHENE	ND	1	.2
TRANS-1,3-DICHLOROPROPENE	ND	.5	.2
TRICHLOROETHENE	ND	1	.2
VINYL CHLORIDE	ND	.5	.3
ACETONE	ND	10	.2
2-BUTANONE	ND	10	.5
MTBE	ND	1	.2
4-METHYL-2-PENTANONE	ND	10	.1
2-HEXANONE	ND	10	.1
VINYL ACETATE	ND	2	.7
CARBON DISULFIDE	ND	1	.2
DIPE	ND	2	.1
ETBE	ND	2	.1
TAME	ND	1	.3
T-BUTANOL	ND	20	.5

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	111	63-143
TOLUENE-D8	105	63-143
BROMOFLUOROBENZENE	111	63-143

RL: Reporting Limit

Laboratory Data Evaluation for UST 765A and OWS 765B Site

This section addresses the validity and quality of data collected from UST 765A and OWS 765B Site at MCAS El Toro, California.

Introduction

Analytical data were reviewed and validated in accordance with the *National Functional Guidelines for Organic*(EPA, 1999). For this project, 100 percent of the data were subjected to Level III Data validation was performed by the project chemist.

Laboratory analytical data were subjected to a four-stage process of evaluation that included completeness checks, verification of hard copy and electronic results, validation of data, and final evaluation based on the best judgment of the project chemist.

During the review process, the data were qualified by the validator to indicate whether they were affected by deviations from the analytical protocols set forth in the *Draft Sampling and Analysis Plan, Former Marine Corps Air Station, El Toro, California (IT, 2003)*. Unusable data are qualified by as rejected ("R" flag). All other results are either reported as detected (no flag) or are qualified as nondetected ("U" flag), nondetected with uncertainty at the detection limit reported ("UJ" flag), or detected with uncertainty at the concentration reported ("J" flag).

Samples were submitted to EMAX Laboratories in Torrance, California for chemical analyses.

Analytical Quality Control Program

This section describes the field and laboratory QC sample results that were used to evaluate the precision, accuracy, representativeness, completeness, and comparability (PARCC) of the analytical data.

Precision - Precision was evaluated based on the QC results submitted from both the field and the laboratory. The relative percent difference (RPD) of matrix spike and matrix spike duplicate (MS/MSD), laboratory control standard and laboratory control standard duplicate (LCS/LCSD), and the field duplicate samples provides information on the precision of sampling and analytical procedures. The RPD for duplicate samples could not be calculated when one or both results were nondetect. Precision results for the samples were within the required limits.

Accuracy - Evaluation of the percent recovery of spiked analytes in MS/MSD, LCS/LCSDs samples, and surrogates provides information on accuracy. In addition, initial and continuing calibration results provide information on analytical accuracy. Accuracy results for the samples were within the required limits, with the following exceptions:

- The percent difference in the continuing calibration for chloromethane and bromomethane exceeded the acceptance limits for samples 812380-0089 through 0093; thus, results were estimated.

Representativeness - Representativeness was assessed through evaluation of method blank and trip blank samples. Target analytes were not detected in method blank or trip blank samples.

Completeness - Completeness was evaluated using two criteria: first, by ensuring that all analytical requests were met, samples were received in the proper condition, and all analytes were performed within the technical holding times; and second, by evaluating the analytical completeness by calculating the percent of acceptable analytes. The completeness parameters stated in the quality assurance project plan are as follows:

- Completeness goal for holding times is 100 percent.

Appendix G

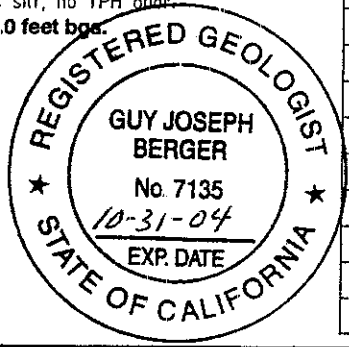
Soil Boring Log

Geologic Log/Well Construction 765-CB-1

Project MCAS - EL TORO		Drilling Company CASCADE	
Project Number 812380		Drill Rig CME85	Begin Drilling 8/01/03
Client SWDIV		Driller DAN CIRAULO	End Drilling 8/01/03
Location FORMER OWS 765		Drill Method HSA	Well Completion Date 8/01/03
Geologist D. HASSER	Checked By G. BERGER	Date Drilled 8/01/03	
Borehole Diameter 11/6 INCHES		Total Depth of Borehole 41.5 FEET bgs	Depth to Water NO ENCOUNTER

LITHOLOGICAL DESCRIPTION		Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL	
SOIL COVER: silty SAND (SM): Brown (10YR 5/3) dry loose, 80% very fine sand, 20% silty fines, trace gravel, micaceous, no odor 4" thick		0	SM							
From 0.3-0.6', ASPHALT, approximately 4" thick.		0.3	SW							
From 0.6-1', AGGREGATE BASE: gravelly SAND (SW): dry, medium dense 80% fine to coarse arkasic sand, 20% gravel to 3/4" in size, faint odor		1	CL							
From 1'-3', sandy CLAY (CL): Dark brown (10YR 3/3) to dark yellowish brown (10YR 3/4) damp, stiff, 60% clay, 30% fine to coarse sand, 10% silt, rare coarse sand grains, low plasticity, porous, slight TPH odor.		3	CL							
812380-0089 Sample collected at 5.0 feet bgs.		5	SC			15.2	8	6		
From 3'-5', clayey SAND (SC): Dark yellowish brown (10YR 4/4) damp, medium dense, arkasic 70% fine to medium sand 20% clayey fines 10% silty fines faint TPH odor		5	SC							
From 5'-8', same as above but with 30% higher clay content.		8	CL							
From 8'-10', silty CLAY with sand (CL): Dark grayish brown (10YR 4/2) to brown (10YR 4/3), damp, stiff 70% clay, 20% silty fines 10% fine to medium sand arkasic, no odor, faintly discolored.		10	ML			0	7	6		
812380-0090 Sample collected at 10.0 feet bgs.		10	ML							
From 10'-11', SILT with sand (ML): Yellowish brown (10YR 5/6), damp, stiff 80% silty fines, 20% very fine to fine sand, micaceous no odor		11	SC				15	6		
From 11'-11.5' clayey SAND (SC): Dark brown (10YR 3/3) damp, medium dense, 70% fine to medium sand, 20% clayey and 10% silty fines, no odor		11.5	ML			0	11	6		
From 15'-15.8' sandy SILT (ML): Yellowish brown (10YR 5/6) to brownish yellow (10YR 6/6), moist soft in places to stiff 80% silt 20% fine to medium sand, micaceous, no odor.		15.8	ML			0	10	6		
812380-0091 Sample collected at 15.0 feet bgs.		15	SM							
From 15.8'-16.5', silty SAND (SM): Brown (10YR 4/3) moist, medium dense micaceous arkasic, 80% sand, 20% silt trace clay, no odor		16.5	SM			0	7	6		
From 16.6'-20.8', silty SAND (SM): Brown, (10YR 4/3) damp to moist, medium dense, arkasic micaceous 70% fine to medium sand 20% silt, porous, no odor.		20.8	CL				12	6		
812380-0092 Sample collected at 20.0 feet bgs.		20	CL							
From 20.8'-21.5', silty CLAY (CL): Dark brown (10YR 4/6 to 3/5) moist stiff to very stiff, 70% clay, 30% silt, micaceous, no odor.		21.5	ML			0	7	6		
From 25'-25.5' clayey SILT (ML): Brown (10YR 4/3) to yellowish brown (10YR 5/6), moist, stiff to very stiff micaceous, 60% silt, 30% clay 10% fine to medium sand, no odor		25.5	SM				10	6		
812380-0093 Sample collected at 25.0 feet bgs.		25	SM							
From 25.5'-26.5', silty SAND (SM): Brown (10YR 5/3) moist, medium dense 60% fine to medium sand 40% silt, trace clay no TPH odor		26.5	SM				10	6		
SAND with silt (SP): Yellowish brown (10YR 5/6) moist, medium dense arkasic, 80% fine to medium sand, 20% silt, no TPH odor.		30	SP			13	6	6		
812380-0095 Sample collected at 30.0 feet bgs.		30	SP							
Not submitted for analysis.		32	SP							
		34	SP							
		36	SP							
		38	SP							
		40	SP							

CEMENT-GROUT,
95% PORTLAND CEMENT
& 5% BENTONITE GROUT



NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Sept 22, 2003 - 07:39:27 INT CORP/IEFA...West\812380\LOGS\765-CB-1.dwg

Geologic Log/Well Construction 765-CB-1

Project MCAS-EL TORO		Project No. 812380						
DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
From 40'-40.5' SAND (SP): Yellowish brown (10YR 5/6) moist, medium dense micaceous, arkosic, 90% very fine to fine sand, 10% silt, no odor. From 40.5'-41.5' SILT (ML): Dark yellowish brown (10YR 4/4), moist, stiff micaceous 90% silt, 10% very fine sand, no TPH odor. 812380-0094 Sample collected at 40.0 feet bgs. Not submitted for analysis. TOTAL DEPTH = 415 FEET BGS NOTE: No groundwater encountered no caving	40	SP			0	6	6	
	42	ML				8	6	
<div></div>	44							CEMENT-GROUT, 95% PORTLAND CEMENT & 5% BENTONITE GROUT
	46							
	48							
	50							
	52							
	54							
	56							
	58							
	60							
	62							
	64							
	66							
	68							
	70							
	72							
	74							
	76							
	78							
80								

Shaw Environmental, Inc.

PAGE 2 OF 2



Appendix H
Non-Hazardous Waste Manifest

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No CA 6170023208		Manifest Document No 90302		2. Page 1 of 1	
3. Generator's Name and Mailing Address MCAS El Toro, Caretaker Site Office Base Realignment & Closure, 7030 Trabuco Irvine CA 92618				818655-90302			
4. Generator's Phone (949) 726-2506 Attn: Scott Kehe				HAHQ3603891			
5. Transporter 1 Company Name Island Environmental		6. US EPA ID Number CAR000053405		A. State Transporter's ID		B. Transporter 1 Phone (909) 598-4449	
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID		D. Transporter 2 Phone	
9. Designated Facility Name and Site Address US Filter Recovery Services (Calif.) Inc. 5375 South Boyle Ave. Los Angeles CA 90058				10. US EPA ID Number CAD097030993		E. State Facility's ID	
				F. Facility's Phone 323-277-1500			
11. WASTE DESCRIPTION				12. Containers		13. Total Quantity	
				No. Type		Unit WL/Vol.	
a. Non-regulated waste				6 DM		1200 P	
b. Non-regulated waste				4 DM		240 G	
c.							
d.							
G. Additional Descriptions for Materials Listed Above 11a. USF Profile #P153864: soil with trace organics 11b. USF Profile #P153865: water with trace organics				H. Handling Codes for Wastes Listed Above			
15. Special Handling Instructions and Additional Information Caution: Wear appropriate protective clothing and respiratory protection when handling Site pick up address: MCAS El Toro CTO-24 & GSA UST 651 / IRP16							
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations							
Printed/Typed Name SCOTT KEHE				Signature 		Date 09/09/03	
17. Transporter 1 Acknowledgement of Receipt of Materials				Signature 		Date 09/09/03	
18. Transporter 2 Acknowledgement of Receipt of Materials				Signature		Date	
19. Discrepancy Indication Space							
20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this manifest except as noted in item 19							
Printed/Typed Name				Signature		Date	

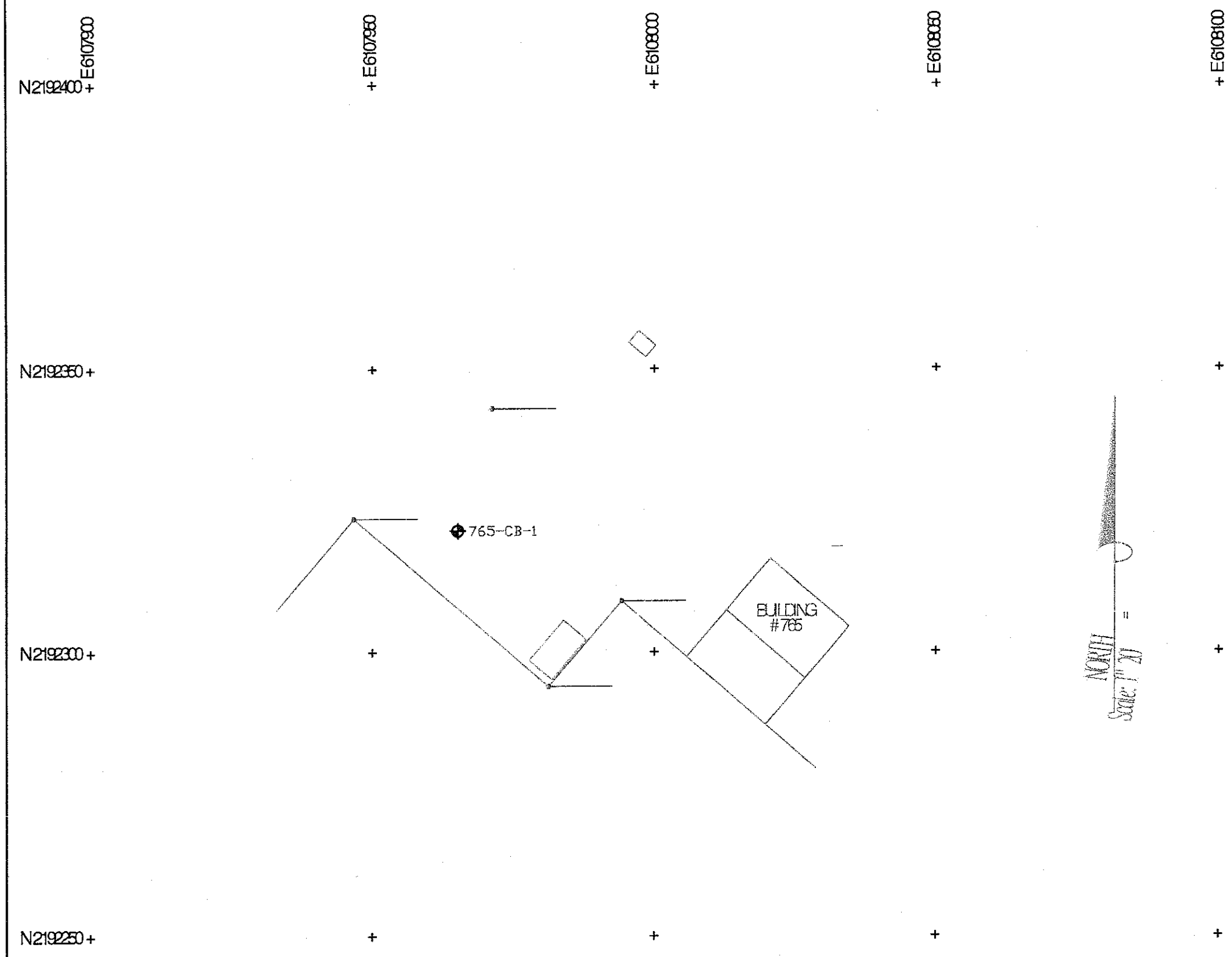
NON-HAZARDOUS WASTE

TRANSPORTER

FACILITY

Appendix I

Land Survey Data



DATUM
HORIZONTAL :
North American Datum of 1983 , (NAD 83)
CCS83 ZONE VI 1991 35 epoch adjustment
VERTICAL :
North American Vertical Datum of 1988 , (NAVD 88)
Orange County Surveyor 1995 adjustment

CONFORMATION SAMPLE BORING DATA

Designation	Northing	Easting	Elev.(Ex. Ground)
765-CB-1	2192321.5	6107965.1	281.0

THIS DRAWING WAS PREPARED UNDER MY SUPERVISION
USING DATA FROM FIELD SURVEYS PERFORMED BY
ELS&M AND DATA PROVIDED BY SHAW E&I INC.

STEPHEN E. EVANS, PLS 7017

DRAWN BY: SE	REVISIONS:	PREPARED FOR:	PROJECT	PREPARED BY:	SHT. NO.
APPROVED BY: SE	INITIALS: SEVIST, 8/08/2003	SHAW E & I 3347 Michelson Dr., Suite 200 Irvine, CA 92612-1692 (949) 660-5300	OWS 765 GSA# GS-10F-00481 MCAS EL TORO	EVANS LAND SURVEYING and MAPPING 3436 Paloma Avenue La Verne, CA 91750 ph (909) 592-5501 fax (909) 592-3993	1 OF 1
DATE: 8/11/2003					
DWG. NO.: CAS-765.DWG					

Regional Board Representative Data

STAFF	John Broderick	TITLE	Engineering Geologist
SIGNATURE	<i>John Broderick</i>	DATE	December 12, 2003
SUPERVISOR	Ann Sturdivant	TITLE	Senior Engineering Geologist
SIGNATURE	<i>Ann E. Sturdivant</i>	DATE	December 12, 2003

VI. Additional Comments, Data etc.

None

OPTIONAL FORM 99 (7-99)

FAX TRANSMITTAL

of pages - 5

To *Frank Cheng*From *Lynn*

Dept./Agency

Phone # *USI 765A*

Fax #

Fax #

NSN 7540-01-317-7368

5099-101

GENERAL SERVICES ADMINISTRATION

**California Regional Water Quality Control Board****Santa Ana Region**

Terry Tamminen
Secretary for
Environmental
Protection

3737 Main Street Suite 500 Riverside, California 92501-3348
(909) 782-4130 • Fax (909) 781-6288
<http://www.swrcb.ca.gov/rwqcb8>

Arnold Schwarzenegger
Governor

December 12, 2003

Base Realignment and Closure
Attn: Mr. F. Andrew Piszkin, P.E.
BRAC Environmental Coordinator
7040 Trabuco Road
Irvine, California 92618

**SUBJECT: CLOSURE OF UNDERGROUND STORAGE TANK (UST) CASE
FORMER UNDERGROUND STORAGE TANK 765A AND OIL/WATER
SEPARATOR 765B SITE
FORMER MARINE CORPS AIR STATION, EL TORO
CASE NO. 083003446T**

Dear Mr. Piszkin:

This letter confirms the completion of the site investigation and that was required of the releases from the underground storage tank and oil water separator tank formerly present at the above described location. Enclosed is the Case Closure Summary for the referenced site for your records.

Based on the available information, including the current land use, and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground storage tank release is required.

This notice is issued pursuant to a regulation contained in Title 23, California Code of Regulations, Division 3, Chapter 16, Section 2721 (e) (If a change in land use is proposed, the owner must promptly notify this agency.)

Please telephone John Broderick at (909) 782 4494 if you have any questions regarding this matter.

Sincerely,

Gerard J. Thibeault
Executive Officer

received
12/15/03

California Environmental Protection Agency

Mr. F. Andrew Piszkin, P.E

- 2 -

December 12, 2003

Attachment: Case Closure Summary

cc: Ms. Nicole Moutoux, US EPA, Region 9 (w/o attachment)
Mr. Rafat Abbasi, DTSC, Office of Military Facilities (w/ attachment)
Ms. Lynn Hornecker, NAVFACENGCOM, Southwest Division (w/ attachment)
Ms. Nancy Camacho, SWRCB, Cleanup Fund (w/ attachment)

JB: ET-ust 765 closure letter

CASE CLOSURE SUMMARY

Leaking Underground Fuel Tank Program

I. Agency Information

DATE: December 12, 2003

AGENCY NAME	California Regional Water Quality Control Board - Santa Ana Region	STAFF	John Broderick
ADDRESS	3737 Main St. Suite 500	TITLE	Engineering Geologist
CITY/STATE/ ZIP	Riverside CA 92501-3339	PHONE	(909) 782-4494, Main # 782-4130

II. Case Information

SITE NAME	Former UST 765A and OWS 765B			
LOCATION	Northeast quadrant of former MCAS El Toro adjacent to former Tank Farm No. 2 and Bldg, 765			
REGIONAL BOARD CASE #	083003446T	LOCAL AGENCY CASE #		
RESPONSIBLE PARTIES	ADDRESS		PHONE NUMBER	
Department of the Navy Southwest Division, Naval Facilities Engineering Command	1220 Pacific Highway San Diego, CA 92132		(619) 532-0784 or (619) 532-0783	
Atten: Ms. Lynn Hornecker				
TANK NO.	SIZE IN GALLONS	CONTENTS	CLOSED IN PLACE/ REMOVED	DATE
765A	500-gallon	Waste oil	Removed	14 Dec 1998
765B	100-gallon	Waste water/oil	Removed	14 Dec 1998

III. Release and Site Characterization Information

CAUSE AND TYPE OF RELEASE:		Unknown			
SITE CHARACTERIZATION COMPLETE?		yes	DATE APPROVED BY AGENCY		26 Nov 2003
MONITORING WELLS INSTALLED?		no	NUMBER	PROPER SCREEN INTERVAL?	
DEEPEST GW DEPTH				SHALLOWEST GW DEPTH	=115 feet bgs
GROUNDWATER, MOST SENSITIVE CURRENT USE:		municipal		GW FLOW DIRECTION	southwest
DRINKING WATER WELL(S) AFFECTED?		no	AQUIFER NAME		Irvine Forebay Subbasin
IS SURFACE WATER AFFECTED?		no	NEAREST/AFFECTED SW NAME		
OFF-SITE BENEFICIAL USE IMPACTS (ADDRESSES/LOCATIONS):				None	
REPORT(S) ON FILE?		yes	WHERE IS/ARE REPORT(S) FILED?		R.W.Q.C.B. – Santa Ana Region
TREATMENT AND DISPOSAL OF AFFECTED MATERIAL					
MATERIAL	AMOUNT	ACTION (TREATMENT, DISPOSAL)/ DESTINATION			DATE
TANK/PIPING	500 & 100-gal. 40 ft. piping	removed/ disposal at recycling facility			14 Dec 1998
FREE PRODUCT					
SOIL	53 cu yd	Excavated soil returned to excavation			14 Dec 1998
GROUNDWATER					

. Release and Site Characterization Information (Continued)

Maximum Document Contaminant Concentration - Before and After Cleanup				
CONTAMINANT	SOIL (mg/kg)		WATER (µg/l)	
	INITIAL	CURRENT	INITIAL	CURRENT
BENZENE		ND<.005		
TOLUENE		ND<.005		
ETHYLBENZENE	.025	.025		
XYLENE	.349	ND<.005		
MTBE		ND<.011		
TPH - G		ND<1		
TPH - D		ND<11		
TPH (418.1)	5,680			
COMMENTS REGARDING INVESTIGATION AND REMEDIATION				
<p>Former UST 765A was a 500-gallon steel tank. Former OWS 765B was a 100-gallon steel tank used to separate waste oil from wash water that was collected in a containment area adjacent to Bldg 765. Both tanks were installed in 1982.</p> <p>The UST, OWS, and approximately 40 feet of associated piping were removed on December 14, 1998. A 14 ft by 14 ft by 8 ft in depth excavation was created during the removal of the tanks. Approximately 53 cubic feet of soil were removed during the excavation. One sample was collected from the excavation bottom (at 9 feet bgs) and one from the excavated soil pile. The soil pile was replaced into the excavation. The analytical results from the two samples: 1) from the excavation, TPRH (method 418.1) - 969 mg/kg; and 2) from soil pile, TPRH - 5,680 and VOCs (method 260B) sec-Butylbenzene - 22.8 µg/l, 1,2-Dichlorobenzene - 119 µg/l, 1,4-Dichlorobenzene - 28.7 µg/l, Ethylbenzene - 24.8 µg/l, Isopropylbenzene - 12.5 µg/l, p-Isopropylbenzene - 34.6 µg/l, Naphthalene - 171 µg/l, n-Polybenzene - 36.2 µg/l, Tetrachloroethene - 96.2 µg/l, 1,2,4-Trimethylbenzene - 1,580 µg/l, 1,3,5-Trimethylbenzene - 4,060 µg/l, total Xylenes - 349 µg/l</p> <p>The area excavated to remove both UST and OWS is within the boundary of Installation Restoration Program Site 13 part of a listed Superfund site, for which a baseline human health risk assessment and record of decision has been completed.</p> <p>On August 1, 2003, one confirmation soil boring was advanced to a depth of 40 feet bgs at the location of former UST 761A. Samples were collected from depths of 5, 10, 15, 20, 25, 30 and 40 feet bgs. The samples taken at 30 and 40 feet bgs were not analyzed. VOCs, TPH-G, and TPH-D were not detected above laboratory reporting limits in the five analyzed samples.</p>				

IV. Closure

DOES COMPLETED CORRECTIVE ACTION PROTECT <i>EXISTING</i> BENEFICIAL USES PER REGIONAL BOARD BASIN PLAN?			Yes
DOES COMPLETED CORRECTIVE ACTION PROTECT <i>POTENTIAL</i> BENEFICIAL USES PER THE REGIONAL BOARD BASIN PLAN?			Yes
MONITORING WELLS	no	NUMBER DECOMMISSIONED	NUMBER RETAINED
LIST ENFORCEMENT ACTIONS TAKEN		None	
LIST ENFORCEMENT ACTIONS RESCINDED			